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The Dental Digest

April 1930

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THE DENTAL DIGEST

VOLUME XXXVI APRIL, 1930 NUMBER 4

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THE DENTAL DIGEST
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THE DENTAL DIGEST

VOLUME XXXVI APRIL, 1930 NUMBER 4

Restoring Pleasing Expression with Artificial Dentures*

By JAMES P. RUYL, D.D.S., New York

FIRST ARTICLE

CORRECTING A PROGNATHOUS CROSS-BITE

Miss A, age about 50, presented with the conditions which are partly shown by the photograph of the casts in Fig. 1.

One was immediately impressed by

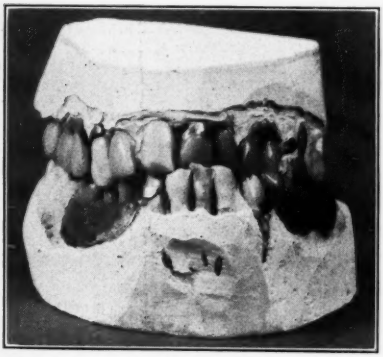

Fig. 1

the unpleasant protrusion of the mandibular teeth, which, to make matters worse, was not straight forward but was visibly to the left. This ruined the appearance of what was an otherwise pleasing face.

Four natural teeth remained on the maxilla, the right central and cuspid and the left second bicuspid and second molar. The roots of the right and left laterals and the left central carried Richmond crowns. A partial plate, which carried three teeth on each side, had been worn for a long time and, as might be expected under the conditions, had been driven pretty well into the tissues for lack of proper support.

On the mandible there remained three incisors, the two cuspids and the right second molar. A partial plate carried seven teeth. The relations of the jaws, when the plates were in place, had been for nearly ten years about as shown in Fig. 2. She had evidently been able to masticate fairly well and was well nourished.

Miss A and her friends had become

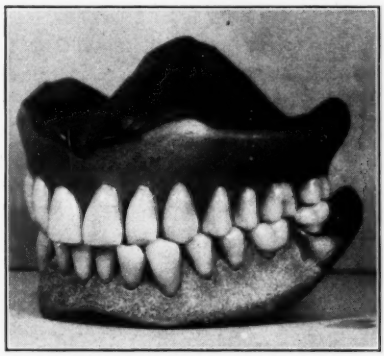

Fig. 2

* This is the first of a series of six articles by Dr. Ruyl on this subject.

so accustomed to the facial expression that resulted from the protrusion and deflection of the mandibular teeth that this characteristic appearance had to be taken into consideration when new dentures were made for her. Any attempt to correct this deformity immediately by setting the new teeth in the normal relations which probably existed years ago would have been unwelcome to her and to those who knew her well.

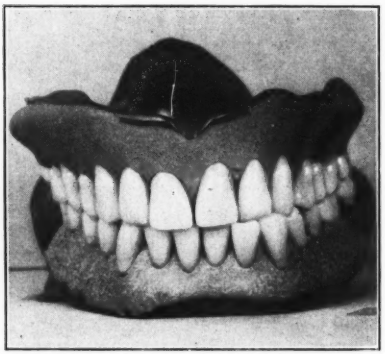

Fig. 3

The plan of treatment was to construct a series of dentures which would correct the unhappy position and appearance of the teeth as shown in the casts by such gradual stages that no one would notice any change in the expression. It was important, therefore, that the first dentures should preserve the characteristics of the habitual expression, but should begin an unobtrusive return to normal position.

The first set of dentures is shown in Fig. 3. The appearance of protrusion was retained by thrusting the disto-incisal angle of the left mandibular lateral well forward in front of the maxillary lateral. So effectively did this retain the desired expression that it was possible to set the maxillary centrals outside the mandibular centrals, which was a decided step in the return to normal. The results were entirely satisfactory to the patient and her friends.

The maxillary and mandibular posteriors on the right side were set in very nearly the same vertical plane—another step toward normal occlusion.

When the time came to remake the first set of dentures (Fig. 3), the protrusion of the mandibular teeth was still further corrected by reducing the protrusion in the left mandibular lateral and cuspid a little more.

By these easy stages the protrusion and asymmetry were corrected without detection by friends and very satisfactorily to the patient.

285 Madison Avenue

Nitrous Oxid, Oxygen, Carbon Dioxid and Ethylene In the Practice of the General Practitioner and That of the Specialist*

By A. P. SUSSMAN, D.D.S., Bayonne, N. J.

The part played by dentists in the discovery and development of general anesthesia is a matter of historical record familiar to all. Wells and Morton, both epoch-makers, were dentists.

It is to be expected, from the extremely painful nature of our work, that members of the dental profession should be especially active in the perfection of agents and methods for the induction of general anesthesia. It is gratifying to observe the interest manifested in the use of nitrous oxid and oxygen for this purpose. The marked improvements which have been made recently in the technic of administering nitrous oxid and oxygen have brought this mixture into great demand as a general anesthetic for dental and general surgery.

Each patient presents an individual anesthetic problem. In order to decide on preliminary medication and on the choice and method of anesthesia, all the factors of the particular case must be carefully considered. Septicemia is a contra-indication for local anesthesia, and nitrous oxid and oxygen should be chosen, because it does not exercise any destructive influence on the blood or tissues. Injecting into a septic area is bad and should be avoided (Englander).

Dentistry presents a great variety of types of operations as well as patients. This fact, with the different symptoms, indicates clearly that where surgical intervention is generally practiced the operator should have sufficient knowledge and experience in regard to the requirements of anesthesia. Nitrous oxid and oxygen is a mild respiratory and cardiac stimulant, and with it anesthesia can be induced in the average normal patient in about one minute.

There are many types of patients for which the use of general anesthesia is indicated. Young children can seldom be induced to submit to the injection of local anesthesia any more readily than they will to what is contemplated. It is a mistake to force them into submission, as it leaves a lasting dread of dentistry.

The request of the surgeon to the patient should be as follows: "Now we are going to place this over your nose and we should like you to breathe easily and naturally. Relax and you will quickly drift off to sleep."

NITROUS OXID AND OXYGEN ADMINISTRATION

At the beginning of the induction the expiratory valve should have little or no tension upon it, otherwise the patient will have difficulty in taking the anesthetic and consequently he will experience a sensation of suffocation. For

* Read before the Society for the Advancement of Anesthesia in Dentistry, New York, N. Y., February 17, 1930.

the same reason the pressure of the administered gas should never be raised during the first few breaths of the induction, but should be maintained with just sufficient pressure to bring the required gases to the patient easily without effort on his part. Nitrous oxid is given to the patient until deep signs of anesthesia manifest themselves. This is done contrary to the adherents of slow induction for many reasons. The patient, nine times out of ten, when given almost 100% nitrous oxid will experience no unpleasant dreams. It seems as if the subconscious mind does not have time to act before unconsciousness is gained. There should be no noise, such as rattling of instruments, nor loud conversation. His position in the chair should not be changed until he is fully asleep. Any subconscious movements should not be interfered with until it is necessary to do so for the patient's safety. Many times the increased pressure of the gases will push the pharyngeal pack further back and thereby increase the leak. I have found the most satisfactory and efficient pack to be a small roll of gauze.

The aim of the anesthetist is to determine, as early in the anesthesia as possible, the proportion of nitrous oxid and oxygen for the patient. The greater his experience, the sooner will he be able to do this with certainty. After this proportion is once ascertained, the apparatus will deliver the same mixture as long as desired. After a brief experience one is enabled to approximate the desired proportion, thus rendering it easier to obtain quickly the constant mixture needed for the particular patient in hand.

To observe color with any degree of certainty, we divide our patients in Plethorics, Normals and Enemics. In Plethorics a duskiness will be seen in light anesthesia, cyanosis in varying degrees in surgical anesthesia, and intense cyanosis in the deep plane. Anemics will not show cyanosis until in the markedly deepened plane, and at times not even then.

During nitrous-oxid anesthesia, when the patient becomes cyanotic, his behavior is characteristic. He is restless, owing to enlargement of the brain cortex, while resulting intercranial pressure causes reflex stimulation, resulting in irregular muscular spasm defined as jactitation. This fact in itself acts as a safety valve in nitrous-oxid anesthesia, because it is so pronounced and operates as a timely warning. Cyanosis is to be avoided because other dangerous symptoms of asphyxia are sure to follow. Surgical anesthesia is not obtained when the patient appears cyanotic.

Visible Control of Flow of Gases

Rendering the rate of flow of gases visible so that the relative proportion of each gas may be estimated at a glance (also assuring you that the desired flow is actually taking place) has been solved by having each gas bubble separately through water into a glass mixing chamber. I might also mention that the passing of the gases through this washing process is an advantage in their purification.

Action on the Blood

By regulating the proportions of the two gases brought into contact with the blood it is theoretically possible to keep the oxygenation of the tissues going on as in normal life and at the same time

secure the true physiological effect of the nitrous oxid. In maintaining these conditions another important factor enters in, namely, carbon dioxid. Henderson has demonstrated that the carbon dioxid in the blood is a respiratory stimulant, therefore overventilation with oxygen is to be avoided. In advocating rebreathing of nitrous-oxid-oxygen mixture Gatch claims that the beneficial effects are due to the carbon dioxid which comes from the air. His practice is to allow rebreathing until the percentage of carbon dioxid in the gas in the bag reaches 4%, that is, the composition of ordinary expired air as far as carbon dioxid is concerned. Decomposition of the nitrous oxid in the blood into oxygen and nitrogen does not seem to occur.

Hamburger and Ewing expressed themselves in favor of the harmlessness of nitrous oxid for the blood. They found it produced no permanent diminution of the hemoglobin and no enemia, as well as no increased hematolysis. Although differences in the quantity of the hemoglobin and the red blood corpuscles may occur, they are of transitory character and devoid of surgical importance. The formation of the reduced hemoglobin is referable not to the anesthetic but to the associated asphyxia. An increase in the time of coagulation is common, but not invariably present.

Crile says that nitrous oxid produces no degenerative changes in the cells of the body nor harmful results in any organ of the body if proper technic and administration are employed, avoiding cyanosis or an excess of rebreathing.

Crile further says that nitrous oxid can be given longer and with less danger than other general anesthetics. Nitrous oxid, like anything else, in the hands of the reckless is bad.

An even flow of gases is at all times essential, and in this pressure-gauges and regulators are an advantage.

REBREATHING

Rebreathing into a small rubber bag acts as a safety valve and as a continuous indicator of the rate and depth of respiration. The bag may be greatly distended before the pressure becomes dangerously high, giving plenty of warning for the reduction of the flow of gases. For a prolonged narcosis there is quite a saving of gas.

Respiratory obstruction, such as very large tonsils, tumors or cellulitis of the neck, pronounced arteriosclerosis, atheroma and high blood-pressure, are to be considered in any form of anesthesia.

PREMEDICATION

Preliminary narcotic medication increases the confidence of nervous patients, lessens the amount of anesthetic required, prevents the excessive accumulation of mucus in the throat, reduces the liability to shock and eases the immediate post-operative pain, while often giving to the patient a happier exit from the influence of the anesthetic. The margin between complete anesthesia and respiratory failure is lengthened, making anesthesia a safer procedure; in other words, "the margin of safety is increased."

Crile has demonstrated that when the administration of morphin precedes the induction of anesthesia, the acidity of the blood is less than in those who have not received this preliminary dose, and the morphin when thus given does not

interfere with the return of the blood to its normal alkalinity.

Ethylene

Ethylene is a gas somewhat lighter than air. Not more than 12 cubic feet of ethylene are used in an hour's anesthesia. No explosion should occur, because the average operating room contains not less than 4,000 cubic feet, which would make the proportion of ethylene in a room 0.3% or less, which is below the explosive limit. Only ten explosions have been reported, one in about 42,000.

The Physiological Effects of Ethylene—Respiration

In the absence of asphyxia the respiratory center is not markedly affected. If care is taken not to force the concentrated gas (100% ethylene) in inducing the anesthetic state, the respiration rate remains normal for the individual, no period of hypernea or dyspnea being in evidence. With the proper mixture anesthesia is maintained with respirations which are slow, regular and somewhat shallow. The rate and depth of the respirations are more nearly like normal sleep than is the case with other general anesthetics.

In a series of over 1100 patients operated under ethylene anesthesia at the Presbyterian Hospital, Chicago, there has been no fatality nor any condition of the patient which threatened to be serious.

Technic of Ethylene Administration

No special instructions are necessary for administering ethylene-oxygen anesthesia. Any one capable of administering nitrous oxid can, with a little experience, give ethylene with good results. It should be remembered, however, that ethylene is a more powerful anesthetic than nitrous oxid. Luckhardt and Carter found that mice, rats, rabbits, guinea-pigs and kittens could be anesthetized with a 90% ethylene and 10% oxygen mixture *in one-half of the time* necessary to anesthetize the same animals with the same percentage of nitrous oxid. Even in lower concentrations ethylene was found to be more rapid in its action. Because of its more rapid and potent action the administration really requires less skill, experience and watchfulness.

Light surgical anesthesia takes place within from one and a half to two minutes. The proportion of the gases used is approximately two parts each of nitrous oxid and oxygen and four parts of ethylene. No valve manipulation is necessary.

By comparison, if nitrous oxid and oxygen are used alone, the anesthesia will not be so smooth and the patient will be near the danger zone.

Advantages of Ethylene

The advantages of ethylene are:

(1) The patient is under immediate control, for oxygen or carbon dioxid stimulation and anoxemia and anesthetic shock are absent.

(2) There is much quieter breathing and better relaxation than in any other form of gas anesthesia, without cyanosis.

(3) It is a most economical method of gas administration, the average consumption of ethylene being four to five liters a minute, at a cost of about three

cents. Children require as little as 1½ liters a minute.

DISADVANTAGE OF ETHYLENE

The disadvantage of the method is the inflammability of ethylene. It has been shown that we may maintain in the bag and the machine an anesthetic percentage of high ethylene and low oxygen which is entirely outside the range of explosibility. The addition of nitrous oxid and carbon dioxid still further reduces the explosion hazard.*

The inflammability of the gas and its explosibility in proper concentration with air or oxygen is a property of the gas which precludes its use in the presence of a free flame or electric cautery or in the immediate proximity to any source of electrical discharge. In this respect it resembles ether. Warming the gases in rebreathing and dampness due to a seepage of moisture in a degree reduce the explosion hazard.

Ethylene alone is more powerful than nitrous oxid, but not quite so effective as ether. When given a half-hour following the administration of a suitable dose of morphin (in adults) or codein (in children), ethylene-oxygen produces an anesthetic state as profound as ether and without the prolonged uncomfortable after-effects to the patient (vomiting and gas pains).

ACTION OF ETHYLENE ON THE BLOOD

Brown states that ethylene apparently does not enter into chemical combination with the hemoglobin of the blood, and that it probably exists in the blood during anesthesia in a state of physical solution. Both Brown and Luckhardt agree that 80% ethylene and 20% oxygen is the proper proportion for anesthetization. "*Blood pressure remains good,* even at the end of an hour's anesthesia."

When nitrous oxid and oxygen are used for induction and ethylene is added, the induction is smoother, but the analgesia is not so good.

Patients, when questioned as to nausea, headache, or unpleasant odor, with a few exceptions have replied in the negative.

It is a fact that nitrous oxid possesses far greater analgesic properties than the others, yet ethylene possesses as great or even greater analgesic properties than ethyl chlorid. With ethylene an extraction can be made either before consciousness is entirely lost or after the return of consciousness without the manifestation of any pain reflexes. By means of the nasal inhaler the analgesia may be continued indefinitely with an active lid reflex and pink color. With nitrous oxid the patient may be snoring and slightly cyanosed, yet almost invariably there will be a slight reflex or movement, although the patient may have no remembrance of pain afterward. The brain block is more complete than when giving nitrous oxid and oxygen, the analgesia appearing earlier and lasting much longer.

Respiration, pulse, color and blood-pressure are more nearly normal when ethylene and nitrous oxid are combined than when either of them is used alone. The fact that the gases are only in physical solution in the blood, with no chemical changes taking place, adds to the feeling of security.

* This statement is apparently in contradiction to the findings of Gwathmey and Hornor as brought out in the discussion which follows.

Dangers and Mortality of Ethylene

A death from ethylene might occur in the same way as from nitrous oxid, i. e., by exclusion of oxygen or asphyxiation. The record of one death from ethylene illustrates how all deaths from either ethylene or nitrous oxid occur.

"I was forcing the anesthesia somewhat." If you force ethylene, that is, cut down the oxygen and increase the ethylene, or saturate with ethylene or nitrous oxid, you change from a safe third-degree anesthesia to the first stratum of the fourth stage or danger zone. When respiration ceases, the case is usually beyond recall.

Nitrous oxid, oxygen, carbon dioxid and ethylene are non-toxic and give a rapid induction. The smell of ethylene is objectionable to some patients, and in these cases anesthesia may be begun with nitrous oxid and oxygen and the change made to ethylene and oxygen when consciousness is about lost. There is total absence of respiratory irritation and very little change in blood-pressure. Recovery is rapid and vomiting rare if the proper precautions are observed. This demonstrates clearly the very slight, if any, depression of blood-pressure during operation, which is one of the great advantages of this type of narcosis.

Muscular relaxation such as you cannot possibly have with nitrous oxid and oxygen is possible under ethylene with the obstreperous patient and with alcoholics.

An eye reflex is present in light anesthesia, but disappears as surgical anesthesia is reached. The conjunctival reflex—the patient closing his eyes when the conjunctiva is touched—is present throughout the entire light stage of anesthesia and disappears when the surgical stage is present.

Anesthesia Precautions for the Anesthetist

(1) Don't be alarmed at slight cyanosis when using nitrous oxid.

(2) Don't forget that jactitation, when using nitrous oxid, calls for more oxygen.

(3) Don't fail to have a witness when inducing anesthesia, especially when using gas. Many lawsuits have resulted because this precaution was not taken.

(4) Don't expect a good anesthesia when using nitrous oxid on alcoholics.

(5) Don't forget to secure the patient's confidence before commencing the administration of the anesthetic, and begin very slowly and quietly. Allow neither talking nor noise in the room. You will thus contribute to a smooth narcosis.

(6) Don't forget that the nose, mouth, stomach, bowels and bladder should be empty before beginning anesthesia.

(7) Don't forget that the anesthetic will act more quickly and more safely when the stomach is empty.

(8) Don't worry about the pulse if the respiration and the color of the face are satisfactory.

(9) Don't forget to withdraw the anesthetic immediately when you have a widely dilated pupil, fixed eyeball, and eyelids partly open. This means that too much has been given.

(10) Don't deceive children about to be anesthetized.

(11) Don't forget that the selection

of the proper anesthetic is as important as its administration.

(12) Don't let convenience preclude safety in the selection of ethyl chlorid instead of nitrous oxid or ethylene or oxygen and carbon dioxid.

(13) Don't forget that premedication, if properly used in well selected cases, especially in alcoholics and athletes, is a valuable adjunct to a smooth narcosis, but should be given at least a half-hour before beginning the anesthesia.

(14) Don't forget that the color of the ear is a very good guide for the beginning of cyanosis.

(15) Don't forget that surgical shock may apparently deepen the anesthesia and cause alarming symptoms.

497 Broadway

DISCUSSION

J. T. Gwathmey, M.D., New York: Adding nitrous oxid does not decrease explosibility. If you just think of the chemical formula of nitrous oxid (N_2O), there is one molecule of oxygen there, and I was under the same impression that you were until I tried a few experiments a day or two ago and found that nitrous oxid does increase the explosibility. If you use, say, 8% or 10% oxygen and you are using a lot of ethylene, say, enough to get your patient under, that has to vary with your patient. You can't have any set rule. If you increase the ethylene, would that increase the explosibility?

Dr. Sussman: It surely would.

Dr. Gwathmey: No, it wouldn't. Just the opposite would be the result. The thing that increases the explosive point is the oxygen, and the more you increase the ethylene, the further away from the explosive point you get.

M. Hillel Feldman, D.D.S., New York: In other words, ethylene in itself is not inflammable nor explosible, but only in the presence of a large percentage of oxygen.

Dr. Gwathmey: Put ethylene in a toy balloon, have a spark inside that toy balloon, as we have done, and spark it in there and that ethylene will not explode. You have to have a small amount of air with it. If you give oxygen and ethylene in that, of course you would naturally think that as you increase the ethylene you are increasing the danger of explosibility. It is just the opposite. You are decreasing it. Where the increased danger of explosion comes in is by increasing the oxygen.

Dr. Sussman: When you are administering ethylene, you will give more oxygen anyway. You will arrange the oxygen with the ethylene.

Dr. Gwathmey: When you are bringing your patient out, as you shut off the ethylene and increase the oxygen, right there is where we increase our explosibility hazard. But if we have the moisture in the room regulated and have a well ventilated room, I don't think that there is any possibility of an explosion. Ninety per cent of all explosions have occurred from static electricity, and we have the moisture tubes from the apparatus itself. If you have moisture in the room (and we can regulate that by an instrument that costs

about $5.00), you can tell exactly how much moisture is in the room, you can eliminate that, and there is no question about it that ethylene is a safer anesthetic than nitrous oxid, because you do not have to bring in an asphyxial element.

There is one dentist in Toronto—I have been trying to get in communication with him but I can't, as I have forgotten his name—who has been using ethylene and oxygen for a number of years, and he states that he doesn't have any more nausea and vomiting than he did with nitrous oxid and oxygen. He is a man who specializes in extracting teeth and does nothing else, and I naturally thought they had better ethylene in Canada than we have in the United States. I didn't find out that what he said was a fact until I took the ether container off my apparatus entirely. Ether is such a penetrating substance that whether you turn it on or not the patient will get some of it and will naturally be a little nauseated after the operation. I have seen enough anesthetics given with the combination which we have mentioned here tonight, and which you mention, so that I know positively that nausea and vomiting are not increased with ethylene. In a long operation, if we keep a patient fairly well oxygenated throughout, the danger of nauseating and vomiting afterward is reduced to a minimum.

Question: In fluctuating the quantity of oxygen through the administration of ethylene, wouldn't that cause nausea?

Dr. Gwathmey: Oh, no. The vomiting centers between the second and third stages. First there is the induction stage, then the stage of excitement, which is rarely ever seen with ethylene or nitrous oxid unless there is a leak somewhere, and then comes deep surgical anesthesia. The vomiting center is between the second and third stages of anesthesia, and sometimes with preliminary medication we can seesaw backward and forward over that without producing any nausea. If the patient hasn't had any preliminary medication, or if the patient has too light an anesthesia, we invariably get a little nausea and vomiting there. If a dentist takes his patient right into the first stage of surgical anesthesia, that is sufficient for his purposes. He will get analgesia and anesthesia. There is no use of ever going to the second and third stages of surgical anesthesia. Dividing surgical anesthesia into three stages, the first stage would be primary, the second would be medium anesthesia, and the third very deep, which is bordering on a danger zone. Now, it is unnecessary for dentists ever to touch the second and third stages. In fact, as somebody mentioned here tonight, with the small amount of gas he uses I don't think it is possible that he comes anywhere near the danger zone at any time.

Dr. Feldman: Regarding safety of the ethylene combination I want to say that since I started to use the combination of the four gases with Dr. Gwathmey, and at Dr. Gwathmey's suggestion, I have today counted up 1,000 administrations in the last three or four months. The formula consists of a flow of 2¼ liters of carbon dioxid, 1½ liters of oxygen, six liters of nitrous oxid and eight liters of ethylene per minute, giving the percentage of 12% of carbon dioxid, approximately 8% to 10%

oxygen, 33% nitrous oxid and 43% ethylene.

Within the last two or three weeks I have made a change in my administration, and I have not even told Dr. Gwathmey about it. This is the first he will hear of it. I start my patient with oxygen and nitrous oxid only. After about five or six inhalations I add carbon dioxid very slowly and ethylene very slowly until I get the flow according to the volume I have just mentioned. After the patient has taken these four gases and is going to sleep, I cut off the nitrous oxid completely. You will ask what I accomplish by that. Mr. Hornor, of the E-K Medical Gas Laboratories, Belleville, N. J., performed some of these experiments at our suggestion and found that nitrous oxid was the disturbing element in the combination from the standpoint of inflammability. He said we have not only 8% or 10% oxygen, but almost 40% oxygen. He figures that the oxygen of nitrous oxid is the element in favor of combustion. So I figure I am getting a good anesthesia by eliminating the nitrous oxid entirely. Running along with the three gases, the patient has a fine, smooth anesthesia period, eliminating to a great extent any possible danger from inflammability.

A. B. Weinstein, D.D.S., Brooklyn: How do you terminate the anesthesia?

Dr. Feldman: I was going to mention that the next time I got a chance to speak. I was going to say that it is just as important to know how to terminate the gases as it is to add them at the start.

The first gas I shut off is the ethylene. Then, if the nitrous oxid is on, I shut that off next. If not, I then shut off the oxygen. I finally flush the entire machine (not the patient) with carbon dioxid so that I then make the machine more impervious to any static spark. That is an important point, I think, for the general practitioner, who does not have so much use for general anesthesia as the specialist. We run water through all the rubber tubing at least once or twice a day, although the machine is sufficiently moistened by the water that goes through the water-feed bottle on the Gwathmey machine. But, as carbon dioxid is a dampener to any inflammable action on the part of ethylene, it is a good idea in addition to the moisture of the machine to flush it with carbon dioxid.

Of course after we terminate the gases the next thing to do is to open the window wide, even if it is only for five seconds on the frostiest, snowiest day. Flush the room with air and get the case out of the room.

Dr. Weinstein: How long does it take your patient to recuperate?

Dr. Feldman: We had a stop-watch in the office for one hundred cases. We found that the average recovery was thirty seconds.

If you had a static spark in the machine, if the parts of the machine were dry, any friction could produce a spark just the same as a spark could be created by walking across a carpet. That spark could ignite the gas. But, as I heard at a meeting of the New York Society of Anesthetists, there has never been an explosion in Australia in the administration of ethylene, and the reason Dr. Gwathmey gives me for that is that all the machines used in Australia are the water-bottle feed. So there seems to be a significant relation-

ship between explosions with ethylene and the non-sight feed type of apparatus. Dr. Gwathmey feels that if ethylene is to be used at all, it should be used on the water-bottle feed machine.

William Regan, D.D.S., Brooklyn: How do you produce your induction?

Dr. Feldman: As I told you before, the sequence of gases is oxygen and nitrous oxid, and after the patient has inhaled five or six times I find that the carbon dioxid will not unduly excite him. The reason why I came to this decision of adding the carbon dioxid and the ethylene afterward, as I did not explain before, was this:

When I started off with the four gases, the carbon dioxid caused very rapid and deep breathing, in some cases excitement, and sometimes caused the patient to pull the inhaler off the face. Patients got the odor of ethylene also. We know that after five or six inhalations of nitrous oxid and carbon dioxid the sense of smell is gone. I noticed no indication on the part of the patients of any change taking place in the induction of the particular gas. They do not know that they are getting ethylene. And I have had occasion to administer gases to patients in my own office who several months ago, or even longer ago than that, had received only nitrous oxid and oxygen. Now, having been given the four gases, they did not know that they had had the four and did not feel any change at all after they woke up. I find that it is a very good change to remove the odor of the ethylene by not giving it to them in the beginning and remove the carbon-dioxid stimulation in the beginning so that they do not get too much excitement. The only time I vary from this is in cases of very high blood-pressure or in the case of the very athletic type. Then I don't care if they do get the odor a little. I get them under very quickly. In the case of very high blood-pressure I don't give them nitrous oxid, but just the ethylene and carbon dioxid. I find that is safer in patients with 240 blood-pressure than nitrous oxid would be. Those are cases I know about that come from physicians.

Dr. Regan: Then in that case you use carbon dioxid along with it. How about the athletic type?

Dr. Feldman: The athletic type surely needs carbon dioxid. The danger is that they are holding their breath, and by keeping the breath going they don't throw the gases as an overload on the heart.

S. Seymour Levy, D.D.S., New York: When you shut off carbon dioxid, you increase the ethylene.

Dr. Feldman: Oh, yes, then I increase the flow of ethylene.

Dr. Gwathmey: Nearly all of my work is that of long operations. I had one last Saturday that lasted four hours and a half, a resection of the sigmoid for carcinoma and bringing the gut together, a very careful anatomical dissection. The patient came off the table with a normal pulse. During this time this patient had had a quarter grain of morphin and fifteen grains of chloretone as a preliminary. At one time the patient had an inclination to stop breathing. From a preliminary medication of morphin and chloretone respiration quiets down. It didn't disturb the surgeon, but it disturbed me a little. By adding just a little carbon dioxid I could bring that respiration up to just where I wanted it. And then again, if a

patient started breathing too rapidly, I would shut off the nitrous oxid entirely and go along for a little while with oxygen and ethylene and bring it down. Then, if it got down too low, I would switch and change. But I was using all of the four gases, first one and then the other, and just varying the proportions according to exactly where that patient was.

The question is not a matter of time the patient is under the anesthetic and oxygen; it is rough surgery. If the surgeon is careful and has respect for the tissues, and if the anesthetist knows what he is doing and keeps an even anesthesia, especially with the gases that make no chemical change in the blood, they can return a patient to bed in the best possible condition. And I guess that is what I have in mind when I speak about the flexibility. Of course in a dentist's chair you wouldn't notice that flexibility. You wouldn't probably appreciate it or want it so much as I would in a long operation lasting two, three or four hours, or, as that case lasted last Saturday, four hours and a half. I should rather give twenty or thirty short operations, as I have done with Dr. Feldman, than to give one lasting four hours. You can have a rest in between.

Dr. Feldman: I wrote a letter to the Superintendent of Mount Sinai Hospital, putting certain questions to him, and I received a letter dated January 27. The questions related to the anesthetic risks of the patients operated upon in the General Operating Room. I asked, "What percentage of the total number of patients examined with a view to taking general anesthesia were refused anesthesia, disclosing them to be poor physical risks?"

The second question: "What percentage of the total number of patients accepted as being good physical risks for general anesthesia succumbed to the anesthesia on the operating table in such fashion as to make the death attributable to the anesthesia?"

And the answer of Dr. Turner, the Director of Mount Sinai Hospital, is as follows:

"Broadly speaking, I should say that over 5,000 general anesthesias are given in Mount Sinai Hospital annually and every patient receives a complete physical examination before operation. The number of deaths is practically nil. The very few deaths in the Operating Room while under anesthesia might with equal or even greater cogency be attributed to non-anesthetic causes."

So that bears out what you said, that the deaths from general anesthesia usually take place in the first few seconds or minutes, and in a hospital the size of Mount Sinai with all these long operations they have practically no deaths under general anesthesia that they could attribute to the anesthetic.

Judicious Lever Technic In the Operation for the Removal of Roots of Teeth, with Especial Reference to Mandibular Molars

By M. HILLEL FELDMAN, D.D.S., New York, N. Y.
Chief of Dental Department, Lincoln Hospital; Instructor, General Anesthesia, Allied Dental Council, New York; Author of Textbook "A Manual of Exodontia"

There are those among us who feel that an elevator is a more conservative type of instrument than the forceps, *per se*. This is true only under certain conditions and within definite limitations of technic. Forceps delivery of teeth can be quite as effective as lever removal. Both types of instruments are necessary for satisfactory exodontic technic. To say that a certain operator favors the one over the other only serves to stamp him as a surgical faddist. Forceps and elevators may do much harm to the tissues during the operation for tooth or root delivery.

It is the purpose of this paper to point out one very serious factor in the injudicious employment of the elevator for the removal of a molar root in the mandible. I am prompted to write this because a certain style of elevator has been advocated for general use by the dentist.

I have made a drawing of a mandibular molar alveolus in cross-section (Fig. 1). This shows the elevator that has been advocated, poised in the alveolus. The elevator is alleged to be an improvement upon the elevators more commonly used. The Cryer elevator and the Winter exolever are so built that the blade forms an obtuse angle with the shank. The "new type" of elevator consists of a blade at right angles to the shank.

In the two illustrations accompanying this paper the right-angle blade and the obtuse-angle blade are shown in the positions for which they are intended. Fig. 1 shows what I call an injudicious application of lever force; Fig. 2 shows a judicious use of the lever.

In order to visualize more clearly what we have in mind, let us call the apex of the lever, that portion which is directed against the root for expulsion, the *toe* of the instrument, and the portion which rests against the bone during leverage maneuvers the *heel* of the elevator. To apply the elevator properly for root leverage, the heel of the instrument must be judiciously directed, for that is just where the injury to bone is done.

In the drawings presented here, I wish first to direct the reader's attention to the shape of the molar alveolus. It will be seen that the alveolus is an isosceles triangle, with its base at the gingival area. It will also be noted that the obtuse-angle blade-shank instrument is so constructed that the blade seems to fit perfectly in the vacant alveolus preparatory to the direction of force against the retained root in the adjacent alveolus. When I say that it fits perfectly, I mean that when the blade is introduced so as to rest against the buccal side of the isosceles triangle of the alveolus, the heel of the elevator

rests against the buccal alveolar ridge and the shank then forms a right angle with the axial line of the root. This is, to my mind, a *perfect* fit of the instrument to the alveolus and root.

exactly what has been advocated. The claim is that a right-angle blade-shank lever will effect the delivery of a mandibular molar root better than the ordinary obtuse-angle blade-shank lever

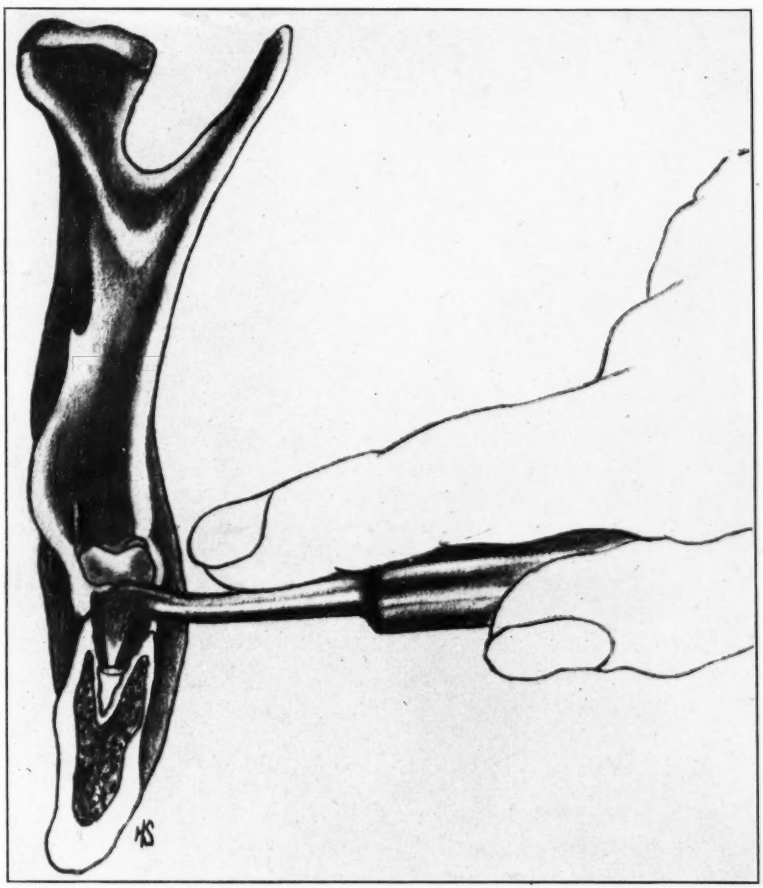

Fig. 1

A drawing made from a section of the molar area of a dry mandible, with the right-angle blade-shank lever applied for a root removal. This is an injudicious application of the lever principle. *The proximal alveolar septum is not the correct bone region that must be employed as a fulcrum.*

In Fig. 1, the right-angle blade-and-shank lever is improperly poised in the alveolus. I have reproduced in principle

with which we are all so familiar. Let us see.

In Fig. 1 the heel of the elevator is

resting against the proximal wall of the alveolus. This point is advocated as the proper point for fulcrum stress. In my opinion this is decidedly injudicious. Simple root delivery does not call for much force, but where there is a difficult root to be delivered, the fulcrum stress is frequently quite considerable. This point of bone area must be injured during the lever stress. If left alone, there is more or less post-operative pain. Painful bone does not heal well. Frequently a "dry socket" will make its appearance to complicate the healing period further. Some think that a dry socket is the result of a poor

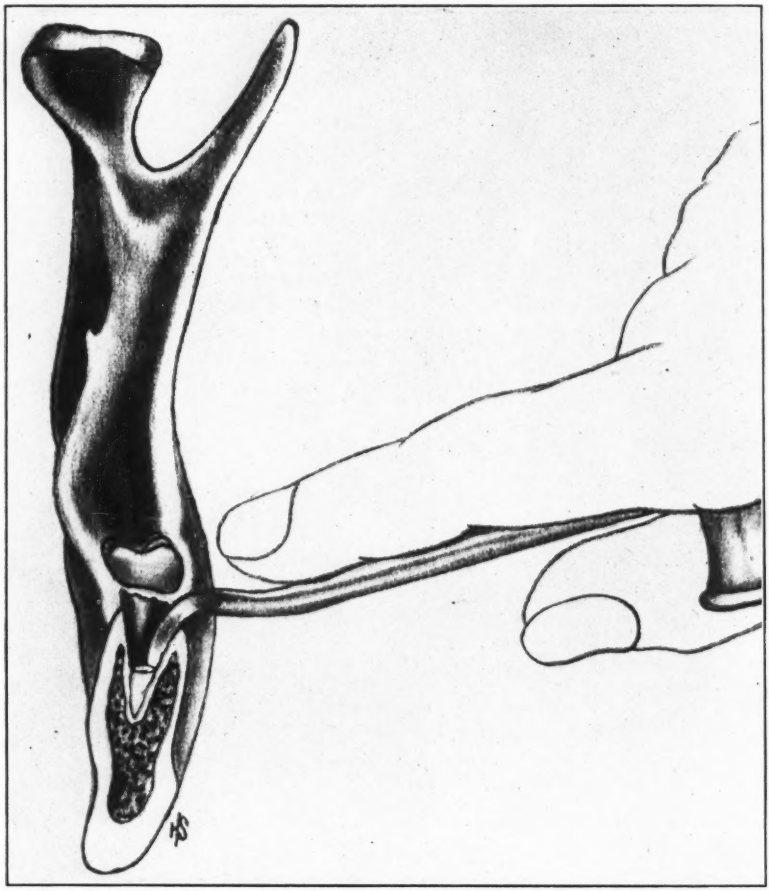

Fig. 2

A drawing as in Fig. 1, with the obtuse-angle blade-shank lever poised for root delivery. This shows the correct or what I here designate as the judicious exercise of the lever principle. The heel of the lever must rest against the buccal alveolar ridge of bone, and not against the proximal alveolar septum as *incorrectly employed* in Fig. 1.

blood clot following local anesthesia or the disturbance of a blood clot through sucking with the tongue. I prefer to look upon the "dryness" as only a symptom rather than as an end-result. A dry socket, so-called because the alveolus is unprotected by the organization of a stable blood clot, results when bone is injured through the injudicious application of fulcrum stress. Injured or bruised bone does not permit the organization of a healthy blood clot. The clot will form only when the bone is healing. A clot or coagulum being the primary stage of tissue granulation and soft tissue repair terminating in bone tissue regeneration, nature postpones her reparative process until the bruised bone has been taken care of.

I mention these facts concerning dry socket, or osteitis, to point out that improper lever technic is sometimes disastrous and frequently, at least, productive of most unpleasant post-operative sequelae. It is, therefore, to my mind a matter for serious reflection on the part of the general practitioner as to what portion of the bone he is to employ as a fulcrum.

To introduce the right-angle bladeshank in such a manner as illustrated in Fig. 1 would necessitate the employment of the proximal septum as a fulcrum. This means that the proximal septum either of the very alveolus bearing the retained root or of the proximal wall of an adjacent molar must be injured. Pain must result if any but the most minute amount of stress is exercised. Therefore the choice of this type of lever is injudicious.

In Fig. 2, the obtuse-angle bladeshank lever is shown as it is recommended for use, and as it is designed to rest against the inner aspect of the buccal wall of the alveolus. The heel of the lever will rest against the buccal alveolar ridge for fulcrum stress. After the root is delivered, the operator removes with his curet and rongeur forceps the portion of the buccal alveolar ridge which has been used as a fulcrum.

This step removes any possibility of injured bone remaining to cause pain. When the proximal wall of the alveolus is used as a fulcrum, it is not possible to remove the injured bone unless a series of adjacent teeth is being removed. Usually, however, the adjacent tooth bears so much stress during the operation for the delivery of an adjacent fractured root that the pain which follows is inevitable and not to be forestalled. The judicious exercise of the lever principle dictates the employment of the buccal alveolar border for the delivery of a mandibular molar root.

730 Fifth Avenue

Dental Caries and Pyorrhea*

Another Approach

By F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S.

Seventh Article

In previous articles I have attempted to demonstrate that dental caries and pyorrhea are not essentially disease entities at all, but that they are in reality the direct and, when the full significance of all the circumstances is understood, the to-be-expected consequence of a train of events to a very great extent the result of civilized conditions. They become, in fact, part of the price that mankind has had to pay for the last great step toward the light.

In considering the difficulties that civilization has placed in man's path I desire to point out that the matter of diet, which has been so stressed in this connection, is but one small part of the changes that have been brought about, and, important though this undoubtedly is, it is by no means the only or even the most important of the harmful circumstances to which our bodies, and therefore our teeth, are subjected through this agency.

Metabolism—An Equation and a Balance

In the first place it must be remembered that the whole matter of metabolism, which, as we have seen, governs this question, is essentially an equation and a balance, and in this equation the intake side is of no greater consequence than that of the output. Even on the intake side diet is only one part, as there is also the intake of oxygen to be reckoned with, which, as we saw when considering the etiology of pyorrhea, is a matter of great importance. On the output side, which for a perfect functioning of the body must balance the intake, we have the production and the expenditure of energy in all its forms: the voluntary expenditure in both physical and mental energy, and also, what probably exceeds both of these in amount, the involuntary expenditure in growth and secretion and in all those functions which are essential to life and by which we are enabled to survive—in short, the physiological and the psychological processes.

Adaptations Sometimes Attended By Disadvantages

Darwin has taught us that adaptation to a changing environment is essential if a species is to survive, and that this adaptation is brought about by the appearance of variations and their fixation by heredity. This adaptation becomes of survival value owing to some change in environmental circumstances, but it does not by any means follow that it is at the same time an unmixed advantage to its possessor in all circumstances of its life. In many cases, indeed, it may be shown to have been a great disadvantage in some minor ways to a species to have adapted itself in a certain manner, and that to overcome the disabilities thus brought about cer-

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tain compensations have been necessary —some alterations in the function of some organ, for example—of which there are many instances in endocrinology. But, in addition to this, we find that many of these disabilities, the direct consequence of an adaptation, remain, and that these show themselves as tendencies to disease. Obviously, it was of survival value to man to raise himself to the erect position, but this change, though necessary for preservation and development, brought many dangers and difficulties in its train, of which not a few remain, as instanced by the risk of hernia in man, by the tendency to uterine prolapse in woman, and by the difficulty of perfect drainage in the maxillary antrum through a foramen placed well above the floor of that cavity.

It may at first sight appear strange that these disabilities have not been compensated for or have not disappeared in the course of evolution, but when we remember the extreme slowness by which natural selection works and the comparative shortness of the time that has elapsed since man appeared walking erect—which, compared with cosmic time, is but a moment —the perpetuation of these disabilities need not surprise us. Further, when we consider that the dawn of civilization was but some 6,000 to 7,000 years ago, and that this short period is considerably shortened in those nations which today are in the van, we see that mankind has had but some two hundred generations in which to adapt and alter their bodies to make them in tune with their present environment. Realizing, again, the amazing rapidity with which our present environment is changing, so that one generation can hardly understand the circumstances in which the previous one existed, it is hardly to be wondered at that adaptation should always be some steps behind.

Of all the changes for which civilization is responsible, that of the mental life of the individual is obviously the most important. It is here that the human race differs most essentially from the beast creation, as it is here also that the greatest strains and stresses have been cast upon the body by the enormous strides forward that we have taken. It is not surprising, therefore, that although the human body works in the majority of cases more or less satisfactorily, man's mental make-up is the part of his functioning in which he shows the least perfect adaptation to his surroundings, and that this so often proves to be the weak link in the chain.

PHYSIOLOGICAL AND PSYCHOLOGICAL

It is, however, impossible to separate completely a man's physical or perhaps one should say, his physiological life from his psychological life—the two are interwined together—and one of the most promising avenues of modern medicine is that which traverses the border-country between these two sciences.

It is a commonplace to attempt to explain certain phenomena by such expressions as the consequence of mind over matter—of things physiological affected by psychological changes—without much knowledge as to the relationship between the two. We have had an instance of this relationship in the alterations which occur in the reaction of the saliva as a consequence of emotional disturbance, referred to in an earlier paper, when we saw that Starr had

demonstrated that this change was brought about by alterations in the CO_2 content of the blood, resulting from adrenal stimulation.

More recently attempts have been made to correlate the two sciences in the other direction and to explain psychological upsets along physical lines, most noticeably, perhaps, in the work of Cotton and of Hunter, who would find in oral sepsis an etiological factor in insanity. However this may be, the connecting links between physiology and psychology, which have been found in the study of endocrinology, taken in conjunction with the more modern understanding of the automatic nervous system and its function, have supplied entirely new viewpoints from which to study medicine.

A Retrospect

I have attempted to show in a previous paper that the suprarenal glands interacting with the sympathetic portion of the automatic nervous system are the great expenders of energy, and that these are held in check in ordinary circumstances by such glands as the parathyroids acting in conjunction with the parasympathetic; but that if, for any reason, the former should get the upper hand, catabolism will outrun anabolism and upset the metabolic balance in the one direction, whereas an upset in the other would result in a dominance of the parasympathetic over the sympathetic.

Now, in all the processes of life, psychological as well as physiological, this endocrin autonomic system plays an overwhelming part. In addition to controlling the whole of the intake—from the very desire for food, through its digestion and assimilation, to the voiding of the unwanted residue—it regulates the output of energy in all its forms, thus being responsible for the balance or imbalance of metabolism. In the last resort, therefore, it regulates the acid-base equilibrium of the blood, and as a consequence of this it determines the immunity or the susceptibility to caries or pyorrhea.

The Involuntary Expenditure of Energy

I desire in this article to concentrate upon but one portion of the metabolic equation. The intake side we have already sufficiently studied. The voluntary expenditure of energy is so obvious that no further time need be expended upon it. But the study of the involuntary expenditure of energy takes us rather farther afield than most dentists have perhaps traveled in their reading. I believe it to be, however, none the less important as a factor in the search after first causes of dental troubles, and its appreciation I have found to be of great value in understanding certain cases of caries or pyorrhea which at first sight did not seem to follow general rules.

I attempted in my third article, which appeared last November, to give a reasoned explanation of the circumstances behind a constitutional tendency to disease in general and to an upset acid-base balance of the blood in particular, showing that an instability of the endocrin autonomic nervous system would fix the base line from which the strain or stress would start to work, and that this would account for a susceptibility to dental troubles according to the circumstances of the individual. Now, this stability or instability, bal-

ance or imbalance, will be the consequence of heredity combined with the effects of the strains or stresses with which the individual comes into contact, a good heredity being made of no effect by a bad environment, or a good environment helping a bad heredity, according to circumstances.

Let us consider, then, this involuntary expenditure of energy from this point of view, for it must not be thought, simply because it is involuntary, that we have no control at all over it. Much of this energy is, of course, expended in purely physiological channels, with which we are not at the moment concerned, but primitive instinct, the result of ancestral memory, takes a very great deal. This is a statement, perhaps, that requires some explanation. Modern psychologists recognize that the mind, the storehouse of memory, is composed of several layers, of which the conscious is the least important. In this stratum of the mind are stored all those experiences which have been gathered during life, the memories of which are constantly passing through our consciousness, though some may have sunk into the next layer, the subconscious, to be extracted therefrom by an effort of the will or to be brought out through some associated circumstance.

The Unconscious Mind

But in addition to these there exists the unconscious mind, in which are hidden the memories of all the happenings of our ancestors back to the very dawn of life itself. These memories are, fortunately, quite buried, quite inaccessible to consciousness, but they nevertheless exist and are the origins of all instinctive behavior. The two great instincts, those of the preservation of the individual and the continuance of the race, which direct all human achievement, result absolutely from ancestral memory, and essentially the reactions of all animal life to the circumstances of the moment are guided and controlled by instinctive action. This, of course, becomes less true as conditions imposed by civilization and sociology modify the relation of one human being to another; but, although the final results of the stimulations, the effects of ancestral memory may differ as between civilized and uncivilized creatures, the bodily preparation for action remains the same, whatever the circumstances of the creature may be. The restraints imposed by civilized conditions only add a burden and an additional stress to a body activated for a purpose which it cannot perform.

I have shown that the endocrin glands, together with the autonomic system, are the seat of the emotions, that it is through the stimulation of this apparatus that the body reacts to such emotions as those of fear, anger or sex in accordance with nature's plan for the creature's preservation, and as a result certain instinctive performances come about. Now, the emotion is the result of ancestral memory, the unconscious remembrance of the difficulties with which the animal's ancestors have come into contact in all the preceding generations, and the instinctive performances are the recapitulation of ancestral acts undertaken innumerable times throughout that ancestry, until the result is to the unconscious mind a foregone conclusion.

Preparation for Action: The Process Analyzed

The preparation of the body for immediate action is brought about by excessive adrenal sympathetic stimulation. All the organs of the body that are stimulated by the sympathetic are thrown into activity, and those that are stimulated by the parasympathetic become inhibited. In this way the body is cleared of CO_2, excessive alkali is mobilized into the blood stream to neutralize the acid products of expended energy, the sugar content of the blood is increased to provide fuel, and among other things the alkalinity of the saliva is increased.

This is all to the advantage of the creature in a state of nature and acts for its survival, in that it provides the necessary material for fighting, escape or what-not, which material is used up in the process. Where, however, the fight remains unfought or the flight unflown, these materials are not consumed and remain to the individual's hurt.

The Danger of Worry

I suggest that constant and rapidly recurring stimuli of fear, that which we ordinarily call worry, would lead in time either to a hypersecretion of adrenalin or to a fatigue of the gland, followed by an undersecretion, either of which conditions might bring about upset function or even definite organic disease, resulting thereby in a pathological condition from a purely psychological cause, an instance, in other words, of the effect of mind over matter. In addition, when we remember the close interaction between the autonomic nervous system and the endocrin glands, we can see that worry will produce an instability of the general nervous system demonstrated by such conditions as nervous irritability in all stages through nervous breakdown, neurasthenia, to insanity.

Apart, however, from these primarily physical disabilities there will arise in these instances a conflict between the desire to follow out nature's promptings and the knowledge that to do so offends a definite "taboo"—a conflict, that is, between an unconscious desire and a conscious interdict; a conflict, moreover, which is the cause of a very definite expenditure of nervous energy.

Now, such an expenditure of energy is in every way comparable with the expenditure of physical energy; it utilizes stored-up products of anabolic activity in a similar manner and produces by-products of metabolism that are the same, which have to be eliminated or neutralized by the same physiological processes, and which throw upon the regulating mechanism of the blood the same strains. As a matter of fact, the consequences of an emotional crisis upon the ordinary individual are in many cases more noticeable than those of physical exertion, especially so if the circumstances of the crisis are such that there is but little outlet for muscular activity.

Another Conflict That Wastes Energy

In addition to the ancestral memories, the unconscious mind would seem to be utilized for another purpose, the appreciation of which we owe to Freud. This psychologist believes that there exists a large number of memories, de-

sires and unexpressed wishes that the taboos of civilization have caused to be repressed, and that these have been, in every one of us, forced out of consciousness by a more or less conscious process and forgotten. These, however, have not in reality passed entirely out of existence, but have simply been shifted from the conscious into the unconscious mind, and even there they are not entirely buried but are constantly striving to escape and pass into consciousness. Freud suggests that there is a kind of censor whose duty it is to keep these repressions in the unconscious, and as a result of this censorship he believes that there exists a constant struggle between the repressed memories desiring to escape and the forces which keep them imprisoned. This struggle will result in another conflict, another involuntary expenditure of energy, which acts to man's disadvantage and wastes his substance.

Although, perhaps, the whole of the Freudian hypothesis, in all its ramifications, is not accepted by the majority of psychologists, yet the basis on which it is built is now generally recognized, its acceptance explaining much that was previously inexplicable and simplifying the consideration of nervous disease.

We see, therefore, that civilization has imposed a very serious handicap upon mankind, in that it has made it impossible for man to follow nature's promptings and to take the line for which it prepares his body in times of emotion and stress, the consequences of which inhibitions show themselves in a storing in his tissues of materials which become a danger instead of an advantage and in an enormous expenditure of energy on ends that lead nowhere. Both these circumstances will tend to upset the metabolic balance in the one or the other direction and through this the acid-base balance of the blood, so that this side of the matter is not without interest to us when considering the causation of dental disease.

A Case From the Author's Practice

I should like to illustrate this interrelationship between psychological upsets of the kind that we have been considering and such physical disabilities as dental lesions by two cases that have recently occurred in my practice. The first is that of a young married woman in the early thirties who consulted me for very extensive pyorrhea. All her teeth were loose, with deep pockets reaching in some cases almost to the apices; there was a very considerable gingivitis, and quantities of pus could be expressed from the gingival margins. Another noticeable feature in her mouth was that all the thirty-two teeth were present, with no evidence at all of past or present caries. The teeth as teeth were beautifully preserved, and the mouth was exceptionally clean.

I was at first somewhat puzzled to account for such an extreme condition at her time of life. I was impressed with the idea that pyorrhea was a disease of later middle life and not common under forty; I was therefore surprised to find it so far advanced in a woman of her age, especially as she was a person who normally took considerable exercise, being something of an athlete. When I got to know her better, she confided in me that her great disappointment in life was that she had had no children. She was evidently a woman with a strong maternal instinct which was thwarted,

and sublimation into the channel of dog-breeding had been only partially successful in removing the repression of the desire for motherhood. From what has already been said it will be seen that in this patient's case there must have been much emotional distress, accentuated doubtless on seeing other people's children and the domestic happiness of others which she would realize could never be hers. This would, in the manner that I have attempted to describe, so upset her metabolic balance as to bring about a tendency to an alkalosis, which in compensation would result in the deposition of subgingival tartar which had gradually destroyed her alveolar tissues.

The perfect preservation of her teeth and the absolute lack of caries demonstrated a diathesis which, while it would allow an easy elimination or neutralization of acid, would militate against an easy balance in circumstances which would cause an increase in alkali assimilation, thus making her an easy victim to conditions tending to bring about an alkalosis.

The thought of wearing artificial dentures was absolutely repugnant to her, though of course this subsequently became necessary, and this fact undoubtedly added to her distress, with the result that within a few months she had a nervous breakdown and became neurasthenic, a condition now considered to be brought about by suprarenal collapse.

Another Case

The other case is somewhat similar but rather more complicated. In this instance the patient was a young clergyman somewhere in the early forties. He was evidently a round man in a square hole, in that he was a person to whom the preparation and delivery of the Sunday sermon were a veritable nightmare. For years this had been to him a source of extreme worry, and a decision to take matters more easily and to cease from troubling so much was followed by a new anxiety that he was not doing his work to the utmost of his capacity.

On the outbreak of war he took up tractor-ploughing as his part of war work and to his psychic worries added hard physical exertion, for which he was quite unsuited. Had he been content to take these extra duties more lightly, it is probable that the increased muscular exercise would have been greatly to his benefit, as it would have utilized the physical products caused by his psychological distress, but his temperament was otherwise and he much overdid the hard physical labor. As a consequence of this double strain his nervous system broke down entirely and he became extremely ill. His mouth being in a shocking condition, I was asked to see him. I found an extreme state of pyorrhea; all the teeth were loose and pus was pouring from the gums. But, in addition to this, there was evidence of a considerable amount of recent caries, with a large number of small interstitial cavities, in no case exposing the pulp.

Believing, as I do, that caries and pyorrhea are antagonistic conditions, I went carefully into the history of the case, in the effort to explain the phenomenon, and read the riddle somewhat as follows:

His earlier worries, which were very real to him, had, through suprarenal

stimulation, brought about a state of alkalosis which had been the origin of his pyorrhea, which was obviously of some standing. The extreme fatigue of the latter period had converted this suprarenal overstimulation to a suprarenal exhaustion, which had brought about an acidosis and, consequently, caries, as it was also responsible for, in addition, his acute neurasthenia, with its symptoms of low blood-pressure, extreme fatigue and muscular weakness.

The subsequent history of this patient is not without interest. After a long convalescence, during which he resigned his living, he recovered sufficiently to take up some scientific work in which he was interested, and he is now a fairly active man. Nevertheless he suffers occasionally from attacks of retention of urine, the consequence of muscular spasm and not of organic disease, showing that his gland balance, though to a great extent regained, is still unable to stand up against any particular stress, and that there exists a tendency to an upset in sympathetic-parasympathetic tone in the direction of parasympathetic dominance, which results in an overaction of the sacral nerves supplying and contracting the urethral sphincter.

Considered along the lines that I have presented in this series of articles, the etiological factors in both of these cases become plain and obvious, and I know of no other theory of origins that will provide so satisfactory an answer. Certainly carbohydrate stagnation entirely fails to explain the condition in the former case, for I have rarely seen a mouth so clean and well cared for or known a patient so scrupulously careful of all the details of dental hygiene.

An Important But Neglected Point

Consideration of these cases also serves to emphasize a very important point, and one that is often neglected when discussing the etiology of caries and pyorrhea, viz., that a great variety of conditions may be the cause of some particular change in function, and, consequently, that any of these conditions may be found accompanying any of the consequences of that change of function. This does not by any means imply that any particular one of these conditions is the cause of any of the results of that change of function, nor, on the other hand, is it correct to say that any particular result can be brought about in innumerable different ways. The change in function that we are particularly concerned with at the present time is an upset in the acid-base equilibrium of the blood, and the consequences are caries or pyorrhea, as the case may be, though we shall consider other consequences in my next and concluding paper. We have seen that this upset may be brought about in a variety of ways, many of them, possibly at first sight, seeming strange and unexpected and in some cases even opposite to one another, but it is obviously incorrect to pick out any one of these and say that it is *the* cause of caries and equally incorrect to postulate that the causes cannot be laid down because they are innumerable, it being quite possible to discover a common denominator of all the conditions, which in truth becomes *the* cause of the trouble. This I believe to be a tendency to an acidosis.

No Exceptions to a Scientific Law

There is a common expression that exceptions prove the rule. This is of course quite erroneous. To a scientific law there can be no exceptions. What exceptions do prove is that the law has been incorrectly stated. Yet through their consideration and the placing of them in their proper relationship to one another we may be guided to a more correct expression of that law. For instance, it has been said (I have, as a generalization, expressed the idea myself) that pyorrhea is a disease of persons over forty, since it is in the later middle years that the results of the condition are most commonly seen.

If this were indeed the rule, then the former of the cases which I have mentioned is an exception and, rather than proving the rule, disproves it. But if we realize that pyorrhea is generally seen in persons at this time of life simply because the circumstances which bring it about are most common at this period, we see that cases in which it appears earlier are not exceptions at all; they simply prove the rule by being true to type.

The same thing exactly can be said of caries, when we find excess sugar as an undoubted cause of tooth destruction and at the same time a sugar starvation bringing about the same result—excess of energy and also a lethargic disposition both producing the same condition; pregnancy or anesthetics giving an increased susceptibility to the disease without either being truly etiological factors at all. Yet all these most varied conditions are found, either singly or combined with one another, accompanying the same result, their only connection with one another being through their action on metabolism. Considered in this light, therefore, their very multiplicity, which has in the past seemed to make the matter so difficult, gives the clue that we are seeking.

(*To be continued*)

[NEED OF DENTAL TECHNICIAN]

It is possible to give the dental student a working knowledge of fundamental principles which will enable him first to diagnose oral conditions, then to acquaint the dental technician of his findings by means of accurate study models and impressions, and finally to direct, supervise and pass on the work of the dental technician intelligently.

—BANZHAF.

To "Cure" or To "Prevent"

By THADDEUS P. HYATT, D.D.S., F.A.C.D., New York, N. Y.
Dental Director, Metropolitan Life Insurance Company

The proper use of the English language will aid us in a better understanding of new procedures advocated. To use words with our own interpretations which are not authoritative only confuses, and the real object to be obtained is lost sight of. Some men seem inclined to believe that the removal of decay and the filling of a tooth are a *cure* for caries. This is not true if we wish to use the word *cure* correctly. The following definitions are taken from the *Standard Dictionary* and are generally accepted by all careful writers:

Cure: To restore to a healthy and sound condition; to bring about recovery as from disease; a restoration to a sound or healthy condition. (Roget's *Thesaurus of English Words* gives *cure* as: Return to the original state, to recover, to resuscitate, etc.)

Restore: To bring back to a former state.

Recover: To obtain again, regain; to restore as from sickness; to regain health.

The word *cure* should not be confused with the word *prevent*.

The word *prevent* should not be confused with the word *stopped*.

When we remove decay and fill the tooth, we have not cured the disease. We may have *stopped* its further progress, but that is all.

There is a tendency on the part of many—one might believe there is a desire on the part of some—to call all kinds of dental work preventive. This is only partly true. Unless we commence now to make a sharp distinction between the *prevention* of decay and the *stopping* of decay, we shall fail to grasp the full significance of the possibilities for a practical and genuine operative preventive procedure.

Preventive dentistry should include only those procedures which really and actually do prevent decay, even the commencement of decay. Correct diet and proper living are undoubtedly the most important factors in the prevention of decay. Mouth hygiene also is important. The operative procedure for the prevention of decay is simply the closing of enamel openings or cavities before decay can start therein. Data secured from an examination of over three million surfaces scientifically prove that those surfaces where noncarious cavities are found are the ones which frequently decay. In 1922 it was stated that prophylactic odontotomy was not offered as the "panacea for the prevention of all dental troubles, but rather in the hope of being able to suggest some procedure *which may very largely, if not entirely,* remove a state so prevalent and tide us over to that period when right living and correct eating will make dentists and physicians an unnecessary blessing."

It stands to reason, and to the proper use of the English language, that we understand now and for all time that

a decayed tooth cannot be *cured*. It cannot be restored to its former non-carious state. Therefore dental caries is an incurable disease. We can *stop* its further progress. We can replace the lost part. We can fix the tooth so that it shall serve as a useful organ, but we cannot recover the lost part or make the tooth regain the normal state it was in before decay started.

We should submerge our personal opinions and agree to use the English language as we find it defined in the dictionary. To deviate from this or to give our own definitions to words, which definitions are not accepted as authoritative, is to confuse and to retard our progress into realms both practical and scientific which may prove of value to our profession and to mankind.

1 Madison Avenue

[APPLIED ECONOMICS]

No economic law is positive, it is merely a statement of a tendency which in actual operation is subject to modification from the opposing tendencies. It is well to consider that the economics instruction given by the teachers should not be taken literally, that when they teach a procedure to follow under a certain circumstance, it will probably have to be changed somewhat to fit a different circumstance. Intelligence in application is the guiding factor.

—BRADY.

Ethyl Chlorid In Dentistry

By JOHN C. BUCHANAN, D.D.S., Easton, Pa.

The alleviation of all pain is the assurance that we have satisfactorily performed our duties to the patient and removed from the mind of that patient the idea that a dental operation is painful. The use of ethyl chlorid as an anesthetic agent, the ease of its administration, the results obtained when it is properly used, the many indications for its use, and the fact that no expensive apparatus is necessary should favor its general usage, whereas the lack of knowledge of the drug and its administration tends to destroy its value in dentistry.

Ethyl chlorid is a drug that possibly bears a bad reputation from a bad heritage, for every one to whom I have suggested its use immediately asks, "Are you not afraid to use it?" Searching for an answer to this question, I have found a possible one, but refrain from stating it as a true fact, nor do I wish to lay the theme at the doors of our dental institutions. Most dentists state that when they were students this drug did not receive favorable comment. In a way such a statement is true, for I find that, rather than the dental colleges, it is the clinics fostering postgraduate courses that advocate its use, especially the Forsyth Clinic in Boston. The reports from this particular place are indeed most encouraging.

Ethyl chlorid, unless properly used, will not produce proper results, due to improper administration rather than to any fault in the drug. It can be given by the open or closed method. I prefer the open method. Take a dental napkin (6x6) and apply it next to the face with a sufficient amount of cotton to retain the drug. In order to change the odor of the solution, I first put three or five drops of eugenol on the cotton. With children I find that this is better than to have them detect the odor of the drug, for most children know the smell of oil of cloves and think that it is being used to stop the toothache.

I may also ask them to keep their mouth closed upon a tongue depressor and find that they are most willing to accommodate me, for then they know that, with the mouth closed, no extraction can take place. Of course at the stage of relaxation the mouth is opened. Sometimes I have them count and have found that by having them repeat the numbers after me they will be in the operative stage at the count of 8.

In administering the drug I am very careful that the amount I drop is very limited and then drop it only on inhalation, for it is very volatile and, on exhaling, the patient will blow the fumes away from the nose and consequently it does no good. Age is not a factor when the drug is used properly, for I have extracted teeth for patients ranging in age from 18 months to 75 years.

I prefer the use of ethyl chlorid also in opening into fistulas, in incising the fascia of the neck and in changing drains when the act is painful, and the ease of the patient's recovery is most remarkable, with no nausea. The num-

ber of teeth one is able to remove during the period of anesthesia depends directly upon the ability of the operator. Most patients are amazed at the fact that they have been unconscious.

For the general practitioner I can see the advisability of the use of this agent in the removal of the pulp tissues and in the preparation of sensitive cavities. I use the drug in most of my cases on children and in hospital work where the patient is confined in bed. I have combined it with Hilton's method in opening into pus areas.

Considering the danger of ethyl chlorid when used as a general anesthetic, we find it somewhere between ether and nitrous oxid, with a mortality rate of one in 17,000. When Gwathmey states that the probable death rate for nitrous oxid-oxygen is one in 10,000, then the mortality rate for ethyl chlorid is indeed low.

Information relative to statistics shows that Hatfield, of London, considers it "little if any more dangerous than nitrous oxid." Ross, Cantile and Mortimer consider it preferable to nitrous oxid for short operations.

The German Central Society of Dentists prepared a series of records of the number of general narcoses and their fatalities covering a period of four years (1902-1905), with the following results:

Chloroform, 1 death in 42,215 administrations.

Ethyl bromid, 1 death in 121,154 administrations.

Ethyl chlorid, No deaths in 70,630 administrations.

Nitrous oxid, No deaths in 3,062 administrations.

Dr. Howe, in reply to an inquiry, states that in 100,000 administrations of ethyl chlorid as a general anesthetic at the Forsyth Dental Infirmary no fatalities nor alarming post-operative effects were noted. In my own experience, covering the past five years, I have not had an undesirable or alarming effect and in that time I have used it extensively in exodontia and oral surgery.

First National Bank Building

An Oral Health Week at Petersburg, Va.

On February 4, 5, 6, 1930, the Petersburg Dental Faculty, under the leadership of F. R. Talley, D.D.S., carried forward a series of meetings designed to increase the knowledge of and interest in dentistry as a health measure.

Through careful preliminary arrangements, meetings were held as follows:

February 4

1:00 P. M. Kiwanis Club

7:00 P. M. Petersburg Dental Society and Southside, Va., dentists

February 5

9:00 A. M. Junior High School, upper grades, 950 pupils

2:00 P. M. Lions Club

3:30 P. M. Teachers Club of Petersburg

6:30 P. M. Petersburg Medical Faculty as guests of the dentists

February 6

9:00 A. M. High School Assembly, about 1000 pupils

1:15 P. M. Rotary Club

8:00 P. M. Public Meeting

To arouse interest in the public meeting, one hundred tickets were given to each of the twelve members of the Petersburg Dental Faculty and by them distributed to their patients with a verbal invitation to attend. The audience at that meeting was keenly interested.

It was characteristic of the meetings of the week that a very lively interest was displayed, and this has been reflected in the attitude of many members of the public and the medical profession since that time.

A large delegation of dentists from Richmond drove over for the meeting of the Petersburg Dental Faculty, in spite of the fact that the weather was unfavorable.

George Wood Clapp, D.D.S., delivered the addresses.

Federation Dentaire Internationale (F.D.I.)

President: Viscount de Casa Aguilar, Madrid
General Secretary: Georges Villain, Paris
Treasurer: A. L. C. D. Van Hasselt, The Hague

The direction of the work of the F. D. I. is in the hands of the Executive Council, which is composed of representatives of the national committees, the number of the delegates varying between one and five for the various countries. To date the following countries have joined the F. D. I.: Argentina, Australia, Austria, Belgium, Brazil, British India, Chile, Colombia, Cuba, Czechoslovakia, Denmark, England, Finland, France, Germany, Greece, Haiti, Holland, Hungary, Ireland, Italy, Japan, Latvia, Luxembourg,

Mexico, New Zealand, Norway, Peru, Poland, Portugal, San Salvador, South Africa, Spain, Sweden, Switzerland, Turkey, United States of America, Venezuela, Yugoslavia.

The dental profession of Ireland at its last meeting resolved to apply for membership in the Executive Council.

The Executive Committee administers a number of funds, viz., the Miller Fund, the Eastman Fund, especially for the Commission of Hygiene; a fund for scientific research, and the Brophy Foundation, which has been instituted in Chicago. It is expected, due to the efforts of Dr. Kirk, Philadelphia, to establish a foundation in honor of the memory of Fauchard.

Once a year there is a meeting of the F. D. I., and the next meeting will take place in August, 1930, in Brussels, Belgium, the exact time to be published later.

Generally the Executive Council and the Presidents of the Commissions prepare the programs for the meetings, and at the end of the meeting each Commission presents a report with resolutions in the three languages for acceptance by the Executive Council.

The Commission of the Miller-Price Fund, at its meeting in Utrecht, proposed Dr. Aguilar, who was unanimously elected. The gold medal will be awarded to Dr. Aguilar during the Eighth International Dental Congress to be held in Paris in 1931.

Any graduate dentist may become a member of the F. D. I. It is necessary that he send his application to his national committee. These applications are proposed to the Executive Council, which decides on their acceptance. National dental organizations also may become members of the F. D. I.

At the last meeting, at Utrecht, rules for the Eighth International Dental Congress in Paris in 1931 were adopted. The President of this International Dental Congress is Mr. Georges Villain, 10 Rue de l'Isly, Paris. The Congress will take place under the protection of the Government of France, which has offered the splendid Grand Palais in the Champs-Elysees for the meeting. All questions referring to the Congress should be directed to the General Secretary of the Eighth International Dental Congress, 45 Rue de la Tour d'Auvergne, Paris, France.

American Dental Association Meeting

Denver, Colorado, July 21-25, 1930

HOTEL RESERVATIONS

In securing hotel reservations for the 1930 Session, consult the hotel rate-sheet and fill out the blank application below. Mail immediately to the hotel you wish to patronize. The hotel will then advise you of the reservations which they have made for you. Kindly indicate second and third choices.

Please remember that a reservation constitutes a contract with the hotel to provide you with the accommodations you desire. If you find it impossible to carry out your part of the contract, please write or wire the hotel releasing it.

Hotel	Rooms	Single With Bath	Double With Bath	Single Without Bath	Double Without Bath
Adams, 18th and Welton	115	$3.00-$5.00	$4.00-$6.00	$2.00-$2.50	$3.00-$4.00
Ambassador, 1728 California	92	2.00	2.50	1.50	2.00
Albany, 17th and Stout	300	3.00- 6.00	5.00-10.00	2.00- 3.00	4.00- 6.00
Argonaut, 233 E. Colfax	160	4.00	5.50	2.00	3.00
Auditorium, 14th and Stout	200	2.00- 3.50	3.00- 5.00	1.50- 2.00	2.50- 3.00
Ayres, 1441 Logan	75	3.50 up	5.00- 6.00	2.50	4.00
Brown Palace, 17th and Tremont	300	5.00 up	8.00 up	....	....
Colburn, 10th and Grant	100	3.50- 5.00	5.00- 8.00	....	....
Colorado, 17th and Tremont	100	2.50- 3.00	4.00- 5.00	1.50- 2.00	2.50- 3.00
Cosmopolitan, 18th and Broadway	460	3.00- 5.00	5.00-10.00	1.50- 2.00	2.50- 4.00
Crest, 1924 Welton	114	2.00 up	3.00 up	1.50	2.00
Edelweiss, 1651 California	76	3.00	4.00	2.00	3.00
Harvard, 501 E. Colfax	60	2.50	3.50	1.50	2.50
Kenmark, 530 17th	120	2.50- 3.50	4.00- 6.00	1.50- 2.50	2.50- 4.00
Lancaster, 1765 Sherman	75	2.50	3.00- 5.00	2.00	2.50
Marquette, 1725 Curtis	62	2.00	4.00	3.00	3.00
Mayflower, 1710 Grant	80	2.50- 3.50	3.50- 5.00	1.50- 2.00	3.00- 3.50
Midland, 1106 17th	70	3.00	4.00	1.50- 3.00	2.00- 3.00
Mills, 1321 Logan	60	2.50	4.00	1.50	2.00
Newhouse, 1470 Grant	77	3.00	5.00	2.00- 2.50	3.00- 3.50
Olin, 1420 Logan	125	2.50- 4.00	6.00	....	....
O'Neill, 1407 Stout	60	2.00	3.50	1.50	2.50
Oxford, 1612 17th	250	3.50	5.00	2.00	3.50
Page, 1320 Stout	65	2.00- 2.50	3.00- 3.50	1.50	2.00
Park Lane, 450 S. Marion		....	10.00	....	....
Plaza, 330 15th	60	2.00- 2.50	3.00- 3.50	1.50	2.00- 2.50
Sears, 1755 California	94	2.50- 3.00	3.00- 8.00	2.00	2.50- 3.00
Shirley-Savoy, 17th and Broadway	400	3.00- 5.00	5.00- 8.00	2.00- 2.50	3.50- 4.00
Standish, 1530 California	125	2.50	3.50	1.50	2.50
Wellington, 1450 Grant	75	....	3.50	....	....
West, 1337 California	112	2.50	3.50	1.25-1.50	2.00- 2.50
Wynne, 1431 California	100	2.00 up	3.00 up	1.50	2.00
West Court, 1415 Glenarm Place	129	2.50 up	3.00 up	1.50	2.00

MAIL THIS APPLICATION DIRECT TO THE HOTEL

HOTEL RESERVATION

AMERICAN DENTAL ASSOCIATION, DENVER, COLORADO, JULY 21-25, 1930

.....Hotel ....., 1930

Denver, Colorado.

Please reserve sleeping room accommodations noted below:

.....Room(s) with bath for.....people. Rate per day desired $.....

.....Room(s) without bath for.....people. Rate per day desired $.....

Second choice.....Third choice.....

Please confirm this reservation to applicant. I further agree to notify the hotel at once in the event I am unable to use this reservation.

Important to Hotel Manager.—In the event you cannot accept this reservation, please forward this application at once to Dr. I. R. Bertram, Chairman Halls and Hotels, 1222 Republic Bldg., Denver, Colorado, who will attend to its assignment.

DIGESTS

CONSERVATION OF THE ALVEOLAR PROCESS

By M. M. De Van, D.D.S.

Atrophy of the alveolar process after extraction is not necessary, and the author considers that the alveolectomies that he has ordered are the greatest blunders he has committed. When alveolectomy has been performed, the ridges and arches are so much smaller than formerly that the artificial teeth must be set either distally and lingually to where the natural teeth were or in such a position that there is undue leverage on the denture.

If dentures are inserted immediately after extraction, very often the alveoli are filled with connective tissue which becomes infiltrated with lime salts. The loss of the external alveolar plate should be carefully guarded against.

Some of the advantages of the immediate insertion of dentures are: the molding of the lacerated and bruised tissues and the directing of the process of regeneration; the patient is more comfortable and can resume social contacts in a few days; hemorrhage is checked and the sockets fill with scar tissue; healing is delayed, which minimizes contraction, thereby lessening pain; and, finally, centric occlusion is more easily established.—*The Dental Cosmos,* February, 1930.

TRIFACIAL NEURALGIA

By L. W. Schultz, B.S., D.D.S., M.D.

The author divides this disease into two classes: major tic, for which no cause can be discovered, and minor tic, when the cause can be ascertained. The pathology of major tic is as obscure as its etiology. Some believe that it is a degenerative process, while others think that it is a sclerosis. Neither view has been proved by microscopic findings.

Focal infection, secondary anemia, malaria, diabetes, tumors, nephritis, intestinal intoxication, syphilis, etc., may be factors in cases resembling trifacial neuralgia which will disappear when they are treated efficiently.

The author prefers the injection of 75% alcohol to surgical intervention, and he also mentions a new treatment that consists of the inhalation of 15 to 20 drops of trichlorethylene poured on a small piece of gauze. This is used three times a day for from three days to a week, and the inhalation lasts for fifteen minutes, during which time the patient should be under competent supervision. — *The Journal of the American Dental Association,* February, 1930.

Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York

PYORRHEA AND CANCER*

By DR. WILLIAM RIESEN,
Geneva, Switzerland

This article deals with the startling connection between the patients who have or have had pyorrhea and those who have cancer. That the irritation which induces pyorrhea may eventually lead to cancer is not an entirely new idea. It is within the province of the dentist to eradicate pyorrhea, and, if in doing so he lessens the possibility of cancer, he is making a great contribution to humanity. The following conclusions made by the author are very interesting:

(1) In a general manner it has been noticed that patients with cancer of the digestive organs show pyorrheal lesions which have existed over a period of time and certainly long before the appearance of cancer.

(2) Pyorrhea, in consequence of the chronic irritation which it produces at the edge of the gum, sets up a local condition which is favorable for the start of cancer.

(3) Pyorrhea constitutes a predisposing cause of cancer which must not be overlooked. It forms the seat of cancer on the gums just as leucoplakia does for the tongue.

(4) Pyorrhea should be patiently and energetically treated from the moment it makes its appearance.

(5) This treatment plays an important part in the prophylaxis of buccal cancer.

(6) The only intervention which must be undertaken at once is the extraction of all teeth infected with pyorrhea in which it is deemed useless to resort to vaccine or any other form of treatment.

It is important that the dentist examine the mouth carefully during the dental work in order to discover the earliest indications of cancer. There is a definite relation between the mouth and the rest of the body, and the dentist should not look merely to the mechanical side of his work.—*Schweizerische Monatsschrift für Zahnheilkunde*, December, 1929.

*From a thesis presented at the University of Geneva, Switzerland.

RESEARCH INTO THE SPREAD OF ANESTHETIC SOLUTIONS

By DR. HARRY SICHER and DR. B. SPITZER,
Vienna

The question as to how an injected fluid spreads in living tissue is of great practical value, but there have been no experiments thereon. Up to the present such research has been confined entirely to clinical results. Sicher showed that the theory of Schubert to the effect that an anesthetic could travel along a sensory nerve until it came to and influenced motor nerves was incorrect. The theory of Sicher now proved correct was that the anesthetic solution did not run along the entire length of the nerve.

It is known that the toxins of tetanus and diphtheria do travel along the path of nerves until they reach the central nervous system. It is not definitely to be said that the sheath or the nerve fibre acts as the pathway, but it is known that infective processes travel along the sheath of the large nerve branches to the skull.

If one reflects on the fact that the anesthetic solution has a special physical and chemical affinity for nerve tissue, one might imagine from this that the injected solution on reaching the nerve would spread along it much further than it does in the surrounding tissue.

To find out how the solution travels, several dogs and cats were selected and methylene blue injected. It has been shown by Ehrlich that methylene blue has the same affinity for nerve structure as novocain. The injection was made into the infra-orbital canal of a young cat. Twenty minutes later the cat was killed and the eye and roof of the eye removed, permitting a view of the infra-orbital canal and floor of the eye. This same experiment was carried out with the mental and mandibular injections. All experiments proved that the spread of the solution in the nerve itself goes only as far as the solution in the surrounding tissues. — *Zeitschrift für Stomatologie*, December, 1929.

LOCAL ANESTHESIA

By Guido Fischer, Hamburg, Germany

Cocain still has its place in dentistry, as it may be used in pressure anesthesia during the removal of the pulp. Even in 1% solution cocain applied to the mucous membrane may be dangerous, as absorption through the mucous membrane is remarkably rapid. Psicobenzyl is used to desensitize the mucous membrane. It consists of psicain and anesthesin, with the addition of phenol and paraffin oil. Its use is non-irritating, it works promptly, and it is free from all toxic symptoms. The author has experimented with psicobenzyl for several months and corroborates the findings of some other workers in the field. The paste is valuable in reducing the pain of the insertion of the needle. Abscesses may be opened by dipping cotton in the paste and allowing it to remain at the point of incision.

Many new local anesthetics are in use, among them being psicain and percain. Percain is ten times more powerful than cocain and just as much more dangerous. Its value chiefly is as a surface anesthetic. Anesthesia from an injection of percain sets in more slowly than novocain anesthesia. It has persisted, however, for more than sixteen hours after injection with no after-pain. Panthesin is another of the newer local anesthetics.

The question as to the extirpation of the pulp has not been completely settled. Some use arsenic, and others, like Rosenberg, with twenty-five years of experience to carry weight, say that pulps should be removed entirely by means of local anesthesia and not with arsenic. If the pulp is carefully removed, there will be a closure of the apical foramen through the laying down of secondary cementum.

Normal salt solution is the usual vehicle for novocain, but the tendency is to prefer the combination of sodium, potassium and calcium salts as being more nearly isotonic.

Ampoules of ready prepared solution

present the danger of the breaking down of the solutions if they are old. The increasing numbers of unpleasant results following the use of novocain from ampoules are caused by employing a solution that is not sterile. The requirements of a good anesthetic follow:

(1) Maximum isotonicity.

(2) Use of a fresh solution through the union of novocain and distilled water shortly before using, as seen in the double ampoule and dry salt ampoules (used abroad, but not in the United States).

(3) The solution must be crystal clear and free from sediment; it should be injected at body temperature.

(4) The constituents should be used in the smallest amounts of concentration, such as novocain 2% and suprarenin .002%, and give favorable and rapid anesthesia. Diminished dosage is important, as toxicity decreases thereby.

(5) Solutions stronger than 2% should be avoided.

INJECTION TECHNIC

The author prefers psicobenzyl forte to be used as an application to the mucosa previous to the insertion of the needle. It provides a sterile surface and eliminates the pain from the needle. Broken needles are caused by faulty technic and anatomical difficulties met with during injection. Some needles cannot be removed and when sterile will become encapsulated. Only a syringe which can be conveniently boiled should be used. Most frequently needles are broken off during an attempted mandibular or tuberosity injection.

In making the mandibular injection the author locates the point of insertion of the needle in a depression external to the pterygo-mandibular ligament. This depression is fairly constant. The needle enters from the opposite side and penetrates to a depth of 1½ to 2 cm.

When the depression beside the pterygoid ligament is not distinct, the palpating finger gently feels for the internal oblique line beneath the mucous membrane, and this will always be found external to the ligament.

In operating in the upper jaw the author refers to a technic which consists of an injection at the muco-buccal fold, depositing the solution at the apex. The needle is then slightly withdrawn and its position changed so that more of the solution is discharged distally. In certain cases, as in canines, a supplemental injection is made mesially to the tooth as well. The tuberosity injection is not favored by the author, due to the danger from infection.

Ordinarily there should be no untoward results following an injection of novocain. If, however, the composition of the solution is incorrect, the instruments not sterile, the needles dull, the injection too rapid or the technic faulty, we may expect trouble to follow. When the operation involves bone and periosteum, we may expect some after-pain. Where, however, an injection is made and no surgical procedure follows, as in the case when a cavity is prepared or pulp removed under novocain, there should be no after-pain. Too rapid injection and intense pressure must be avoided. Sometimes swelling accompanies a poorly made injection, but this will subside without complica-

tions if complete asepsis has been followed.

Penetration of the venous plexus is followed by hematoma and occurs during the tuberosity injection. If the needle used was not sterile, infection and swelling may follow and the area involved become pus-laden.

Four cases are reported of deaths following an injection of a local anesthetic. In three cases teeth were extracted, and in one the injection was made for cavity preparation. Tuberosity, infra-orbital and mandibular injections were those used. Lack of asepsis was the probable cause in each case.

There are three means by which infection may be carried into deeper structures.

(1) The instrumentarium and solution may be infected.

(2) The tissue at the point of injection may be infected and the needle carries the infection deeper.

(3) The bacteria follow the path of the needle puncture into the deeper structures.

If the needle enters infected tissue and the solution is discharged, deep infection may be the result. If great pressure is used to make the injection, then the infected matter is forced deeper into surrounding healthy structures.

The author calls attention to the fact that there is often a severe reaction following an apparently simple injection. This is due to the constitutional condition of the patient.

In extra-oral injections the author quotes Lindermann, who believes that fourteen days should elapse between extra-oral injections to avoid the possibility of infection.—*Fortschritte der Zahnheilkunde*, March, 1930.

DANGER OF SEPTICEMIA DURING CERTAIN DENTAL INTERVENTIONS

By M. J. Sembille, Professor,
L'Ecole Odontotechnique, France

Every dentist should bear in mind the possibility of complications during or following an operation. One cannot be too careful. Especially contra-indicated is pressure upon an abscessed area. There is always grave danger to the patient in a sudden discharge of toxins into the blood stream or into the adjacent tissues. This may cause general septicemia with all its complications. The heart, kidneys, liver, lungs and nerves may be involved or it may produce a swelling in the neighborhood of or an aggravation of the initial lesion.

These accidents are frequent and may pass unnoticed at times, as it is only the severe manifestations that attract our attention.

If palpation is made too strongly in defining the abscess outline or too great a pressure brought to bear in evacuating pus, the patient may suffer in consequence. During local anesthesia the injection into an infected area may result in the distribution of septic material with dangerous results.

In a case reported by the writer the patient presented to his dentist with swollen cheek, and during the examination there was a lot of handling and pressure upon the abscess. Shortly thereafter the patient showed all the symptoms of a general septicemia, and within an hour his condition had become alarming. A surgeon was called in and an immediate operation was

performed. In a few days the patient was out of danger.

In another instance the patient who was about to have a tooth extracted objected to the administration of novocain. He reported that on a previous occasion he had had a tooth removed and the dentist had injected in and around an abscessed area with the result that two days of high fever followed.

The author believes that in all abscess cases the most important consideration is to evacuate the pus. This should be done wherever possible before the tooth itself is removed.

The dentist will save himself from many disagreeable situations if he will always bear in mind the severe consequences following the treatment of infected teeth when due regard for caution is neglected.—*La Revue Odontolgique,* December, 1929.

[GOLD-FOIL]

The practice of filling teeth with gold foil has had a far-reaching effect on the practice of dentistry. Its demands on the operator are such that, when these are fulfilled, a development in training is effected that is especially beneficial to students and beginners in practice. Its continued practice, when skilfully carried out, maintains a standard in mind and skill of hand that no other practice is able to accomplish.

—MOORE.

DENTAL ECONOMICS

The Recommended Patient

By S. J. HORN, New York, N. Y.

It is said that anticipation is sweeter than realization. This is particularly true in the instance of many recommended dental patients.

The recommended patient, as a rule, has a concrete mental picture of the dentist as well as some definite ideas about his actions, mannerisms and general behavior. All these preconceived notions are based primarily on the description given by the friend or relative who recommended the dentist in question. No matter what Mrs. Smith's opinion may be of her dentist, if she thinks enough of him to recommend another patient, she will in justice to her stand speak very highly of him. On some occasion she will even wax eloquent in the recital of the exceptional merits of her dentist and exaggerate to such an extent that it becomes a physical impossibility for him to live up to the elaborate description of his virtues.

There are a few definite attributes, however, that we know are sure to go along with each recommendation, and which the dentist can readily live up to. In the first place, Mrs. Smith is sure to say that her dentist is very kind-hearted and very considerate of his patient's comfort. He will not cause pain unnecessarily as many other dentists do, and the touch of his hands, drill and other dental instruments is so gentle that they can hardly be felt. Other recommendations that Mrs. Smith is certain to make are that her dentist is an honest man, that he does not overcharge his patients, that his work is excellent, that he has a charming personality, that his nurse is a sympathetic soul, that he sterilizes all his instruments before each patient, and that he does not keep his patients in the waiting room for an hour before attending to them. These and many other points in favor of her dentist are bound to come up during the course of conversation about dentists and dentistry.

The dental practitioner who disregards all these factors and proceeds to act contrary to all recommendations brings about a situation resulting not only in the loss of the recommended patient, but quite often also in the loss of the good-will of the former patient who did the recommending.

Dr. Jones Loses a Patient

Mrs. Cartright decided to see a dentist about her teeth. Usually such momentous decisions are played to the tune of several heaving sighs of despair, adding a touch of tragedy to the scene and evoking condolence and commiseration from sympathetic listeners, but Mrs. Cartright has enacted the very same scene so often that the performance has become somewhat mundane

and wofully lacking in the novel or dramatic flavor.

The last occasion in question happened during a little dinner party. Mrs. Cartright picked up a glass containing some icy concoction and took one sip. The instant the icy liquid came in contact with her teeth her features assumed a panicky expression. She quickly put the glass down, pressed her hand against the right side of her face and emitted an agonizing "Ouch!" Callous indifference was the only response from her audience. Out of politeness there were a few questioning glances. Her performance would probably have been a total failure, if it had not been for Mrs. Whitmore, who occupied the seat next to her.

Mrs. Whitmore, a kind-faced, matronly little woman, immediately proceeded to offer her sympathy. "Oh, you poor dear!" she said condolingly. "Your teeth bother you?" "Oh, my poor teeth!" moaned the martyred Mrs. Cartright, "I simply must go to see a dentist." "Yes, do by all means," urged her kindly neighbor. "Go to my dentist. You will find him a real charming personality."

Mrs. Cartright was somewhat dubious about a charming individual in connection with a dentist. Her attitude was somewhat akin to that of a sentenced criminal who appeals to a higher court, not with the thought of ever beating the case but merely to stave off punishment as long as possible. She knew quite well that ultimately she would have to serve her sentence in a dental chair as a punishment for neglecting her teeth, but since she was to decide when that punishment was to be meted out, she kept postponing her visit to a dentist.

"Doesn't your dentist hurt you at all?" she asked timidly. "Hurt?" Mrs. Whitmore registered surprise. "Why, my dear, not at all, not Dr. Jones. His hands are so gentle you hardly know when they touch you. Of course, I know there are some dentists who hurt you terribly, but not my dentist. I am sure you will agree with me after you visit him. He is just darling, speaks so softly, and always smiles. Do go there tomorrow, don't put it off any longer, and, by the way, give my love to his charming nurse. She is a delightful soul."

The following morning, when Mrs. Cartright opened her eyes, she felt a slight dullness in her head and a general sensation of depression. Reluctantly she got out of bed, slipped on a dressing gown and, going to the window, looked out on the cold grayness of a sunless world. The few people in the street hurried by like silent specters hibernating in their top coats with collars rolled high up for greater protection against the inclement weather. The moist pavements, the clammy atmosphere, the whole scene was as cheerless as a foggy day in mid-ocean. Emitting a deep sigh, she turned away from the window.

Mrs. Cartright during her lifetime had awakened on many similar gray mornings, but never had they affected her so depressingly as today, for way back in the labyrinthian depths of her subconscious mind there lurked the promise made on the previous evening about a visit to Dr. Jones. Yes, she simply must see a dentist! Her poor, sensitive, exposed nerves peeping out from her receded gums simply refused to stand any further abuse.

Dr. Jones's office was located about a mile from her home. She spent a miserable ten minutes waiting for the street car to come along. The clammy moisture, which turned to a light drizzle, chilled her to the very marrow and added greatly to her discomfort. A half-hour later, after a jerky, unpleasant ride, she stood before the tall office building that tenanted the charming, smiling, humane Dr. Jones. Mrs. Cartright paused. "Should I? It is such a nasty day!" She had a slight headache, and her teeth did not bother her, at least not just at this moment. She might be more fit physically for the ordeal in the dental chair tomorrow. Fate interceded. A gentleman on his way into the building, noticing her, held the door open for her to enter. (What mysterious powers control the lives and destinies of dentists and dental patients!) Thus it came to pass that several minutes later Mrs. Cartright found herself in the reception room where Dr. Jones held forth. There ensued ten minutes of restless waiting, during which time myriads of unpleasant impressions assailed the unhappy prospective patient.

Finally through the door marked "Operating Room" (the word *operating* presaging dire things to the visitor) came a young lady in a nurse's regalia. Mrs. Cartright looked up eagerly. She was but human, she felt sick, ill at ease and nervous. She craved human sympathy. And here before her stood the charming, sympathetic soul that Mrs. Whitmore had told her about last night. The nurse greeted her. "Good morning, have you an appointment with the Doctor?" Mrs. Cartright's countenance fell. (A "good morning" is somewhat like a prayer; one person prays fervently with his whole soul, another merely makes a hasty genuflection.) The nurse's greeting was of the latter kind. "Why, no-no," stammered our martyr confusedly. She was about to tell her of Mrs. Whitmore, to convey her love according to her request, but the young lady checked her with a brisk, "The Doctor will see you shortly."

There ensued ten more minutes of deep, mysterious, depressing silence. Mrs. Cartright's mind was working energetically. The thoughts that assailed her were not of regret at her imprudent step in coming here. Those thoughts had come and left long ago. What was uppermost in her mind now was getting up and leaving as gracefully as possible. The door to the operating room again opened and the nurse appeared. "The Doctor will see you now," She sang out in a monotone.

Mrs. Cartright found herself in the private sanction sanctorum of the illustrious, charming Dr. Jones. Ushered into the chair, she looked about her. Impressively before her on the top of a cabinet were plates of teeth mounted on some contraption. She hastily turned her gaze away. If there was anything that reminded her of death it was a grinning skull and cross-bones, and this set of teeth with their red wax gums, while not actually a skull, was very close to it in its resemblance. In the corner she noticed a large glass containing instruments, scissors, knives, cotton gauze. She looked up—there above her head hanging perilously like a sword of Damocles was the much dreaded drill. She shut her eyes. Presently the door of the adjacent room opened and the doctor appeared.

Mrs. Cartright looked up and smiled, a faint, pitiful and very apprehensive smile. Dr. Jones was tall, handsome, clean-cut, yes, even charming, as Mrs. Whitmore had described. But, unfortunately, the baby had been fretful last night and disturbed his rest, the coffee this morning had been cold, and he just hated cold coffee, but, worst of all, the financial sheet in the morning paper informed him that the stock market had him cornered on the wrong side of the fence, and so his mannerisms, gestures and general behavior this morning were anything but humane. He stepped over to the chair and greeted his patient: "How do you do?" It was that kind of a "How do you do?" that a small depositor would expect from his banker when about to ask for a loan. "What can I do for you?" Mrs. Cartright giggled, yes, actually giggled like a foolish young girl. "My teeth . . . Mrs. Whitmore suggested to see you." She wanted to tell him the nice things his former patient had said about him, but his officious bearing checked her.

Dr. Jones did not always handle his patients in the same arbitrary professional manner. Usually his touch was delicate, his tone of voice soft and soothing, and he did smile most charmingly, but how in the world can a fellow smile most charmingly when his broker 'phones him for a check to "cover" within the hour? How can a fellow be kind, humane and considerate when in the throes of mental agony? His unfortunate new patient shared with him in his suffering. His hands were not very gentle. Mrs. Cartright immediately felt their touch; likewise did she feel the touch of the exploring instrument as it dug into her tender gums. Neither did he mince his words in telling her about the pyorrhetic condition of her gums. He even added a few admonitions about her shameful neglect, etc.

Whatever kindly feeling Mrs. Cartright ever entertained toward Mrs. Whitmore was obliterated that morning by her recommended dentist. Needless to say, it was not only Mrs. Cartright's first visit to the charming Dr. Jones, but also her last.

Several weeks later, for the want of something more important to do, Dr. Jones was rummaging through his files when he accidently came across Mrs. Cartright's name. He paused. "I wonder why I lost that patient," he mused.

220 West 42nd Street

PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

What is considered the maximum dosage of 2% procain for a patient at one sitting? I refer especially to extracting purposes.

C. C. M.

ANSWER.—In *Local Anesthesia in Dentistry,* by Fischer and Riethmuller, we find the following statement: "If a 2% or a 4% solution is employed, a dose of 0.8 gram novocain, i. e., 40 or 20 c.c. of these solutions respectively, should not be exceeded." This is quoted from Broun, who is a general surgeon.

Consequently it will be seen that any dosage in reason is considered safe, and the only guide would be the reaction of the patient. Some show a marked idiosyncrasy to novocain.

Editor, Practical Hints:

It is my practice to employ novocain in both local and conductive anesthesia for the preparation of sensitive, vital teeth for filling. I resort to the use of temporary stopping, after preparing the tooth, between treatments. Upon cementing the inlay I find the cavity excruciatingly sensitive, in many cases so much so that the patient finds the pain almost unbearable. I have used a combination of phenol (95%) and chloroform as an obtundent followed by a coating of varnish in the cavity, but this only slightly reduces the hypersensitivity.

Do you find this condition resulting after the use of novocain, and, if so, what is your procedure in such cases? Is there any way in which I may prevent such a disagreeable condition from arising?

G. F.

ANSWER.—It has been found that the use of gutta-percha or temporary stopping is very apt to increase the sensitiveness of a cavity, probably due to one of two causes: (1) the temporary filling is not absolutely tight and allows seepage, and (2) under the stress of mastication there is movement of the filling that causes irritation. It is doubtful whether the novocain is the cause of the trouble, except that by its use deeper excavation is possible. When operating under novocain great care must be taken not to heat up the tooth, and this may be the cause in your case.

A good plan is to mix zinc oxid and eugenol to the consistency of putty and incorporate in it as much cotton as possible. This may be placed in the cavity without pressure and will harden under moisture in about an hour. It will stand considerable mastication and is a sedative and a non-conductor. The longer it is left in, the better. Another procedure is to line all deep cavities with cement, and some men make this a routine practice, with very satisfactory results.

Editor, Practical Hints:

A patient of mine, a twelve-year-old boy, met with an accident in which his upper right central and lateral were broken off at the gum line. The left central had the mesio-incisal angle broken off also.

I anesthetized the nerves of the two teeth broken off and removed the exposed nerves. The roots are still intact.

Now, what would you advise to replace these teeth? He is an only child, and his parents are in moderate circumstances. If possible, we want to avoid any gold showing.

C. C. M.

Answer.—If the roots can be retained without any pathology developing, then porcelain jacket crowns can be placed, using posts and metal cores. These crowns may have to be changed as the other teeth develop, in order to be in harmony with them.

This will probably be the most satisfactory restoration possible.

Editor, Practical Hints:

What are the objections to somnoform as an anesthetic in the practice of dentistry? It does not seem to be so popular now as it was some years ago.

A. B.

Answer.—A quotation from *Dental Materia Medica and Therapeutics* by Hermann Prinz will answer your question.

On page 350 of the fourth edition we find: "Somnoform is by no means the safest of all anesthetics; a few deaths have been recorded following its use, and as soon as its name disappears from public print it will be forgotten, as it offers no advantage over pure ethyl chlorid."

Editor, Practical Hints:

In devitalizing teeth with an infiltration or conductive injection I find that there is usually a slight pericementitis a few weeks or sometimes a few months after filling the canal, which I do not get if I use arsenic for devitalization.

I take every aseptic precaution such as sealing in an antiseptic before broaching, let the tooth rest with an antiseptic dressing in the canal for a few days and then use sodium and potassium or sulphuric acid very cautiously. In most of these cases the canals have been checked with the x-ray after filling and show no overfilling. In the entire procedure I work near the apex gently so as not to penetrate the canal.

I should like to hear from your readers whether any one else has had this experience and how to overcome it.

P. K.

Answer.—We are glad to publish your letter in regard to pericementitis

and trust that you will receive satisfactory replies to your question.

The latest writings of some of the men especially interested in root-canal work advise against the use of caustics such as sulphuric acid and claim that neither instrumentation nor root-filling should be carried beyond the cemento-enamel junction.

Editor, Practical Hints:

Will you please inform me as to where I can get the latest ideas regarding pyorrhea and the bacterial side of it? Is it caused from a germ? Can the bacteria be isolated? Is it contagious?

I know what causes it, such as incorrect occlusion and other irritants to the gingivae. I also know about treatments, but I do not know about the germ theory regarding pyorrhea.

I have come to believe that pyorrhea is a condition, and that the germ is present as a result of the destroyed tissue, and not that the germ destroyed the tissue. I believe this, but I do not know that it is so, and I wish information about it or advice as to where I can get the information.

G. W. S.

ANSWER.—According to the best authorities there is no specific bacteria causing pyorrhea. The bacteria found in the pockets are the same organisms that are continually present in the mouth and get their hold because of the localized lowered resistance. Excluding the organisms of Vincent's, it can probably be safely said that pyorrhea is not contagious.

The standard textbooks on periodontoclasia are by Stillman and McCall and by Sorrin and Miller. Articles are continually appearing in the journals.

Editor, Practical Hints:

Has ether any advantage over nitrous oxid (plus oxygen and 5% carbon dioxid) as a general anesthetic for extractions? I refer to cases where the patient is physically able to visit the dental office.

Would you ever give ether for extracting children's teeth? If so, under what circumstances?

J. R. S.

ANSWER.—Ether has a slight advantage over nitrous oxid in the factor of safety and in the fact that it gives complete relaxation. With ether it is also easier to maintain the patient at the proper degree of anesthesia.

On the other hand, on account of its odor it is not suitable for office administration, and the after-effects do not make it the anesthetic of choice. Recovery is slower, and nausea is frequent. Unless nitrous oxid is used to start the anesthesia, the induction period is longer than with nitrous oxid and is far more disagreeable. With children nitrous oxid and oxygen is to be preferred.

CORRESPONDENCE

A Warning

Editor, The Dental Digest:

A young lady called on me requesting that I try out a certain mouthwash. The formula was to be given to me. The young woman then asked for my card so that she could show her employer that she had called on me. This I gave her, as I have frequently done in the past with other agents.

A few days later I was called on the 'phone and asked if I had authorized any one to state that this preparation had my endorsement, and that I recommended its use. This young woman had shown my card as a proof of my endorsement.

This is to give notice that I have not authorized any one to use my name for the endorsement of any preparations of any kind whatsoever. May I suggest to all who read this not to give their card to any salesman, as we cannot tell to what use he will put our cards.

Yours truly,

(Signed) Thaddeus P. Hyatt
Metropolitan Life Insurance Company
New York, N. Y.

Dentistry In the Olden Days and Long Before the Baltimore Dental College Was Established

Editor, The Dental Digest:

I recently came across an old History of Richmond, Va., by George M. West, 1856. Mr. West's recollections go back to the year 1792.

I am enclosing a short extract from this book which may be worth reprinting.

L. D. Jones

"Now-a-days (1856) the profession of dentistry gives lucrative employment in our city (Richmond, Va.) to almost a score of practitioners. In the days of my boyhood (about 1795) only one tooth-drawer, who probably never heard the word dentist, did all the work and all the mischief in the dental line. Peter Hawkins was a tall black negro, who rode a raw-boned, black horse; for his practice was too extensive to be managed on foot, and he carried all his instruments, consisting of two or three pullikins in his pocket. His dexterity was such that he has been known to be stopped in the street by one of his distressed brethren (for he was of the church) and to relieve him of his offend-

ing tooth, gratuitously, without dismounting from his horse. His strength of wrist was such that he would almost infallibly extract, or break a tooth, whether the right or wrong one. I speak from sad experience, for he extracted two for me; a sound and an aching one, with one wrench of his instrument. On Sundays he mounted the pulpit instead of black bare-bones, and as a preacher he drew the fangs of Satan, with his spiritual pullikins, almost as skillfully as he did the teeth of his brother sinners on week days, with his metallic ones . ."

[HEMORRHAGE]

To control hemorrhage from a tooth socket, the patient is instructed to roll up a piece of cotton large enough to cover the top of the socket and hold it tightly in place with finger or opposing teeth for five minutes—repeating this if necessary. This stops the bleeding long enough to allow the blood to form a strong clot. The socket is seldom packed, as this is undesirable and only to be used as a last resort.

—THOMAS.

DIETETICS and HEALTH

Diet As Related to Diseases of the Mouth*

By SIDNEY KABEL, New York, N. Y.
School of Dentistry and Oral Surgery, Columbia University '30

Throughout all the specialties in medicine today there is a growing tendency to return to a closer study of the fundamental processes of the body. No specialty has been keener to recognize this need than dentistry. Certainly there is no more fundamental process than that of the conversion of raw materials of the diet into tissue. It is on this process that life itself depends, whether we consider that of the single cell or that of the aggregation of highly specialized cells which we term the body. Following the feeding of faulty diets to animals we find tissue changes in various parts of the body, such as the eyes, digestive system, nervous system, bones and teeth. Growth may be arrested and reproduction prevented. If the disturbance has not been too severe or of too long duration, these faults are corrected by improving the character of the diet. On the other hand, animals that are fed on a normal diet grow well, reproduce well, are extremely resistant to infections, and their organs are found to be in a state of health. The evidence that the diet is of fundamental importance in health is conclusive.

E. V. McCollum, a noted research worker and writer on nutrition at Johns Hopkins, states in the *Newer Knowledge of Nutrition:* "We must attribute our physical deterioration to subjection of the human race to new and unfavorable conditions, but differences of opinion exist as to the nature of and relative importance of these. Life within houses instead of outdoors, the wearing of clothing instead of exposing the skin to the weather with its changing conditions, the eating of soft, cooked food instead of raw, coarse food, the artificial feeding of infants instead of nursing, the burden of responsibilities of civilized life, both mental and moral, and the failure to care for the hygiene of the mouth are among the causes most pronounced. Doubtless each of these plays its part in contributing to place civilized man in many parts of the world in his present unenviable position with respect to health. It can now be asserted with assurance that the chief factor responsible for human deterioration in recent times is not included in the above list. The chief factor lies in the unwise choice of food."

Hyatt carries this statement a little further when he states in an article on *Teeth and Health* recently published in Harper's Magazine that "the most important single factor determining the structure of teeth and their susceptibility to disease is the influence of diet."

* Submitted in Theory and Practice, February, 1930.

With this brief introduction the following aspects of the matter will be discussed:

(1) The diet of primitive man.
(2) The diet of modern man with modifications and effect on the tissues of the mouth.
(3) The five essential elements of nutrition, and its relationship to diseases of the mouth.

Diet of Primitive Man

There seems to be no doubt that primitive people were vastly superior to us in health and physique. Owre, in an address on *Diet* at the joint meeting of the North Carolina and Virginia State Dental Associations, stated that "this is doubtless partly attributable to the fact that the less hardy individuals had no chance for life and died young, leaving only the sturdy to survive. Research shows that this was more largely due to their habits of living, particularly of eating."

Until 1840, in Greenland and Iceland, there were no such words in the language as caries and periodontoclasia. Amundsen and other Arctic explorers exhumed skeletons that had been buried for three to five centuries and did not find any sign of caries. Hirschfeld, of our own School, in a study of primitive skulls housed at the Natural Museum of History verifies this latter statement. In 1840 American groceries were introduced into Iceland, and now the natives have these diseases.

How does it happen that the people of Iceland and Greenland can live when they do not have vegetables and fruits? Davis reports in *Nutrition and General Immunity:* "The native eats muscle meats only in time of stress. He drinks the blood, cracks the bones, and eats the marrow, the intestines and the oils, and in so doing he fulfills all the necessary conditions for a normal nutrition."

Leuman M. Waugh, a member of the faculty of our School, who has had the privilege of studying the Labrador Eskimo and has visited Arctic tribes that have not come in contact with the white man, relates: "In the southern part of Labrador, 300 miles north of Battle Harbor, where the Eskimo can get molasses, sugar, gum-drops, cheap candy and white flour, the teeth are in a deplorable condition. I have never seen mouths in worse conditions. In the northern races we find an entirely different type of Eskimo. He has no carbohydrate food at all. Out of the seventy-eight mouths I examined I found twenty-six cavities. The teeth were worn down and there was no evidence of grooves or fissures. Their teeth are flintlike in hardness and have brown, polished surfaces.

"In this section of the north, where the Eskimos eat an almost entirely protein diet such as dry seal meat, dried fish, sea blubber and things of that sort, they have deep heavy deposits on their teeth which are flintlike. Destruction of the supporting structures of the teeth by the encrusting deposits causes loosening of the teeth and destruction of alveolar process and peridental membranes.

"I think the lack of dental caries in the Iceland and Greenland and Northern Labrador Eskimo is due to the fact that the natives have not had carbohydrate food. Fatty acids do not decompose in the mouth. The only foods from which acids are formed are carbohydrates, and the Eskimos do not have

them. The health of the Eskimo is better than that of the natives of Labrador and the Newfoundlanders on the West Coast. When white man's food is taken to the Eskimo, his teeth decay."

The Diet of Modern Man

The movement in modern life toward living in smaller and more crowded quarters, elegant and sanitary as these may be, has the disadvantage of removing people from the source of supply of their foodstuffs. The food in consequence must undergo treatment of some sort for its preservation over considerable periods of time. Methods of food preservation have reached a high state of perfection, yet in all preserved foods certain elements are lost or their potency diminished. Also, many important elements are either extracted or destroyed during the various cooking processes to which practically all of our foods are subjected.

Owing to the character of our food preparations, perverted appetites are created and, in consequence, foods are usually selected for their taste and appearance without regard to their nutritional value. The saying that we live to eat instead of eating to live has some element of truth in it.

Russel, in a discussion on this question in *Diet of Races and Nations,* relative to the people of England, and it is equally true of America, says: "The English during the last century came *gradually* to substitute bakers' bread for home-made, flesh for some part of their former fare, tea, coffee, spirits, beer, lemonade, ginger beer, and mineral waters for water. Milk is less used, especially by children. The diet has altogether become richer. Judging by the heaps of sweet cakes, pastries, and pies in the baker-shops, which must be swallowed, and the vast manufactures of sugar-plums, jams, chocolates, the amount of sweetstuffs and fatty meats consumed must be enormous."

Another difference between the dietary habits of European peasants and Americans which bears upon the health of the teeth is the amount of sugar consumed. We know that sugar is a predisposing agent of injurious bacterial action. Hyatt, in *Teeth and Health,* says: "During the World War our draft examination disclosed that Italians had remarkably good teeth. These Italian recruits stated that they did not care for sweetened foods. This is a constant dietary idiosyncrasy; for the sugar consumption in Italy is notoriously low, averaging (according to one authority) but thirteen pounds per capita per year or less than a teaspoonful per day. Compare this with an annual per capita sugar consumption of well over one hundred pounds in the United States."

More than 10,000,000 children in this country have seriously defective teeth. Statistics show that at the present time, according to Percy R. Howe, the incidence of dental caries is from 95% to 98%. Ninety-eight out of every one hundred first-grade children examined recently in the City of New York had cavities in their permanent first molars, so that between the ages of five and eight these children's permanent teeth were already impaired. Another New York investigation showed that in a group of 1400 children 96.5% had defective teeth, and that these children averaged seven cavities each. Hyatt, in a statistical report, says: "In Milwau-

kee, out of 26,700 more than 23,000 had defective teeth; in Chicago an examination of 33,381 public school children showed more than 30,000 with carious teeth. Examination of high school children showed that more than 13% of the first molars were gone." As the permanent first molars are the most important teeth, serving both as a keystone to the dental arch and as the most efficient grinders of food, their loss brings about serious damage to the rest of the teeth, to the soft tissues of the mouth and to the general health.

The mouth is an ideal breeding-place for bacteria, and because of its warmth and moisture it fosters rapid growth much in the same manner as does an incubator. These germs may cause a general poisoning of the system or be transmitted to distant parts of the body, where they may produce definite lesions or injuries. There are few tissues in the human body in which bacteria from a dental focus may not locate. Sir William Hunter, a distinguished pathologist, wrote: "My clinical experience satisfies me that if oral sepsis (mouth infection) could be excluded, the other channels by which medical sepsis gains entrance in the body might be ignored." The great Sir William Osler was much impressed by the original and painstaking work of Hunter and concurred in the opinion that the hygiene of the mouth and the preservation of teeth were matters of fundamental health significance.

Sir Arthur Keith has said that the teeth are evidently the first part of the body to degenerate. This is apparently true in animal experimentation and suggests the correct sequence in the relationship of dental to degenerative diseases. However, he says: "I am not one of those who will attribute degenerative diseases to dental conditions. I feel rather that dental diseases are significant indicators of bodily changes which will eventually lead to bodily disaster."

McCollum sums up these opinions very remarkably when he says: "I have come to hold the view that animal experimentation, human geography, and history all point in all but conclusive manner to the diet as the principal cause of our health troubles." He ascribes this chiefly to (1) the over-use of cereal grains, especially in refined form; (2) the consumption of muscle meat to the exclusion of valuable glandular organs; (3) too little use of green vegetables and fresh fruits.

Relationship of Nutrition to Teeth

The effect of diet on teeth will be discussed in relation to the five essentials in nutrition, proteins, carbohydrates, fats, vitamins, and mineral salts.

Perhaps there is no substance in foods which has been discussed so much as protein. There have been advocates of high protein in the diet and those who are equally certain that low protein is best for health and teeth. Sherman and McCollum have stated that modern diets are not apt to be deficient in protein. Howe carried out a number of experiments that suggested that modern diets may be too high in protein. His experiments were further extended and he states that animals do better on low proteins. "The most rapid caries," Howe says, "which we have produced in monkeys occurred on high protein

diet. I have several specimens of the teeth and jaws of guinea-pigs fed on high protein diets which show extensive decalcification."

The most generally accepted theory of dental caries is that of Miller, who held that fermentation of carbohydrates with the formation of lactic acid was the cause of tooth decay. The current opinion on sweets is adequately presented by the three following quotations from leading authorities:

Fones: "When the diet of the average American child is considered, it is not so astonishing to find that dental caries is a universal malady. Originating as it does from carbohydrate fermentation upon the teeth, no other result could be expected. The writer personally believes that in childhood a well-balanced diet, with special emphasis upon the calcium content of foods, and the elimination of free sugar would result in practical immunity from dental caries, even in the absence of a rigid system of mouth cleanliness. It is reasonable to believe that susceptibility is mainly in proportion to the consumption of free sugar, and that immunity is acquired, in a great measure, by the absence of free sugar in the diet. In fact, the evidence is all against the sugar."

Pickerill: "As regards sweets, all are good in that they are all salivary stimulants, and all are bad in that they are readily fermentable, and as a general rule it may be said that the ill effects quite outweigh the good effect."

Wallace: "It is an interesting fact that sugar with the exception of honey always occurs in nature mixed with a very large proportion of acid salts and fibrous tissue, and it is in this harmless state only that the child should get his sugar, namely, as ripe uncooked fruit. If the sugar allowed the child were extracted by him, say, sugar-cane, he would have to perform a lot of work to get a small quantity and therefore would not get an excess of it, and what he did get would be in a form that is absolutely harmless."

The amount of fat in the diet is another subject about which there has been considerable difference of opinion. Some believe, as Howe contends, that too much fat in the diet leads to a soapy formation with calcium, and the lime, a most essential element in diet, is excreted unutilized. Others have concluded that the best calcium retention occurs when there is considerable fat in the diet. Special attention has of late been given to the character of fat, and its value has been rated according to its vitamin contents. Fats are rich in Vitamin A, which Mellanby and Howe and others hold control calcium metabolism and hence calcification. Wolbach in a series of experiments on rats has shown that a deficiency of fat-soluble A results in minor changes in teeth. The specific effect appears to be on epithelial tissues, where the normal epithelium is replaced by a keratinized squamous epithelium. From the dental aspect the effect on the salivary glands is of special interest, since they become in part filled with abnormal tissue and lose their ability to perform their specific chemical functions. The amount of saliva that is distributed is also diminished. Vitamin A is not very plentiful in vegetables. The best source is good yellow summer butter.

The lack of the anti-scorbutic Vitamin C affects, according to Howe, the

calcified tissues directly. Hanke reported in 1926 to the International Physiological Congress in Boston, and it was confirmed by the studies of Eddy of Columbia, that out of 100 cases affected with every type of dental disease in subjects from four to sixty years of age 40% were markedly deficient in Vitamin C. Hanke states: "It is possible by means of a diet containing an abundance of Vitamin C to produce solid gum tissue, to arrest caries, and, with the aid of prophylactic measures, to cure pyorrhea and induce bone regeneration in the alveolar tissues." This vitamin is found in large amounts, according to studies by the Indiana University Dental School, in raw cabbage, lemons, orange juice, pineapples, spinach, tomatoes and turnips.

In depriving an animal of Vitamin D for a long time in the early stages of growth Mellanby of England reports, in a series of experiments, that "the enamel of teeth is changed; neither the dentin nor enamel is of good quality." F. Talbot, in an article on *Dental Caries*, in relationship to Vitamin D says that "in a case of active caries of several teeth it is not enough merely to fill the cavities of several teeth and attempt to correct any obviously harmful dietetic habits. One must try to raise the patient's resistance to caries by means of baths of ultra-violet rays and in many cases prescribe Vitamin D in the diet." This vitamin is most abundant in butter and cod-liver oil.

Research now in progress dealing with vitamins should give us more definite knowledge and enable us to formulate a sound nutritional program.

Diseases of the teeth and bones relate especially to the subject of mineral metabolism; yet, while experimental study shows that specific food substances directly affect calcified structures, this represents but one phase of the subject. A more extended study indicates that there are many things which may influence calcification. The problem appears to be one of relationship, of equilibrium, of balance and of adjustment.

The experiments of Pappenheimer and McCollum on rickets show that a given ratio between calcium and phosphorus needs to be maintained to prevent this disease. Mellanby finds sound teeth in young dogs when the amount of calcium in their diet is low, provided sufficient cod-liver oil is given.

One of the first general considerations in food selection, from a dental point of view, is perhaps to choose those which contain an abundance of mineral elements, since these may be withdrawn in case of general systemic need. Milk, vegetables and fruits are the best sources of inorganic salts.

It has been shown by experiments by McCollum and Davis that lime is of tremendous importance in one's diet, as it not only maintains the normal function of the nerve trunks and builds bone but is necessary for the normal functioning of the blood corpuscle. Therefore many problems of nutrition center about the successful assimilation and metabolism of lime. According to Sherman and Davis, to help one's daily physiological processes normally one must take into the body every day at least 15 grains of lime. In the highly refined foods lime is not present. In the foods grown on very poor soil lime is not very abundant. Therefore in American life one of the

great problems is to secure in the foods an adequate amount of lime for the hard tissues as well as the soft.

Bibly has made the interesting suggestion that the lack of a supply of the basic elements in foods, among which is calcium, might be a factor in caries. According to Howe, the fetus during the last 100 days of life requires a very considerable amount of basic elements over acid, and this affords an explanation for the caries of pregnant women.

A large proportion of the basic radicals are used for bone and tooth formation, but calcium may be withdrawn from the calcified tissues to maintain the alkalinity or neutralize the body tissues if an excess of acid radicals is furnished in the body.

Owre says: "I believe as a rule we eat too much. For this reason I eat only two meals a day, and these are largely composed of fresh fruits and vegetables, which, though invaluable for other properties, are relatively low in caloric content. I find 2000 to 2500 calories a day, if properly distributed among the various kinds of foods, sufficient for almost any one. This is about 1000 calories below the standard of Voigt.

"I eat less than the usual percentage of proteins; I find 10% to 12% entirely adequate for any kind of work. This I get largely from other sources than meat (the latter Owre believes is not essential to a perfect diet because it is one of the main sources of uric acid, a factor in diet to be avoided). Fats should form about 25% of the diet, and carbohydrates 60%. The prescribed fruits and vegetables furnish the necessary vitamins and mineral salts."

It will be but a short time until the great interest now apparent among investigators in nutrition will make available evidence of an experimental nature which will leave no room for doubt that the most effective element in any plan for preventive dentistry, since this is the only way of combating successfully the enormous amount of dental disease, relates to the character of the diet. McCollum stated before the First District Dental Society of New York a few years ago that "the dentist occupies a position of greater importance than that of the physician as a potential teacher of the principles of nutrition to the public."

DENTAL LAWS

Brazil

The following rules for the revalidation in Brazil of the diplomas of dentists educated in foreign countries were translated, for the benefit of our readers, from the November-December (1929) issue of *Brasil Odontologico:*

Art. 1. In order to validate in this country diplomas conferred by foreign schools or faculties authorizing the practice of the profession in the country where they were conferred, dentists who present such diplomas shall tender theses on three subjects of any year in the curriculum of dentistry, maintaining same orally and submitting to a practical examination, in accordance with the present instructions.

Art. 2. There will be two sessions for these tests, the first in March and the second in December, registrations to be made in February and November, respectively.

Art. 3. The candidate shall file his application with the Director of the Dental School, accompanied by a diploma authenticated by the Brazilian Consul of the country where it was granted, with the signatures legally certified; also, the required number of copies of the theses that he is going to offer, and a receipt for payment of fees, as per Article 14.

Note: The candidate may present, when registering, all the titles he has and any scientific works which he may have had published, by way of information for the Board of Examiners.

Art. 4. The practical examination will be held first, and then the oral theses.

Note: Failure in any of the parts of the practical examination will prevent the oral theses being given during the same session.

Art. 5. The practical examination will consist of such points adopted from the respective subjects as may be drawn by lot by the candidate.

Note: The chairs which are to furnish the topics for the practical examination are the following:

(*a*) Dental Prosthetics.
(*b*) Orthodontia and Maxillary Prosthetics.
(*c*) Clinical Dentistry.
(*d*) Dental Therapeutics.

Art. 6. Each examiner will question the candidate for a period of 15 minutes regarding the subject-matter of the respective chair with reference to the technic employed and all that may pertain to the matter of the test.

Art. 7. For the practical examination of the subjects mentioned in the preceding article the same rules will apply as those adopted for the practical examination of the respective chairs, as described in the internal regulations of the Dental School.

Note 1: The subject and the time for

each practical examination will be selected and fixed by the Board of Examiners.

Note 2: In the practical examination on clinical dentistry the observations of the candidate on the clinical case presented shall be written in Portuguese and delivered to the President of the Board of Examiners.

Art. 8. The Board of Examiners for the practical examination shall be organized by the Director.

Note: The Board of Examiners shall consist of the following:

(*a*) The Director of the Dental School, as President.
(*b*) The regular Professor of Prosthetics.
(*c*) The regular Professor of Orthodontia.
(*d*) The regular Professor of Clinical Dentistry.
(*e*) The regular Professor of Therapeutics.

Art. 9. When the practical examination is finished, the Board of Examiners shall proceed to vote in secret session, the approval of the candidate being by a majority of votes.

Art. 10. After having been approved in the practical examination the candidate will be called upon to present an oral dissertation on the theses.

Note 1: The theses shall be composed and printed in Portuguese, having at least 50 pages of text, each page 35 lines, except in the case of original research made by the candidate, in which case they may have any desired number of pages.

Note 2: The candidate shall deliver to the Secretary of the Faculty, when registering, 30 copies of each of the theses, which shall be distributed among the professors of the Dental School.

Art. 11. Each thesis shall be defended before a special Board of Examiners.

Note: The Board of Examiners shall consist of the Director of the Dental School as President and two professors, in accordance with the subject of each thesis.

Art. 12. Each examiner may question the candidate up to 15 minutes on the subject of the theses.

Art. 13. When questioning has finished, a decision shall immediately be made in secret session, the candidate being approved by a majority of votes.

Note: In case of non-qualifying in the defense of any of the theses the candidate cannot be admitted to a new examination until the following term, and the thesis previously presented cannot be used for the new examination.

Art. 14. Upon registration the candidate shall pay 240 milreis for the practical examination and 180 milreis for the defense of his theses, in accordance with the schedule attached to Decree No. 16782-A of January 13, 1925. Once the candidate has been approved, he will request the return of his diploma, with the certificate of qualification attached, by paying a fee of 200 milreis.

Art. 15. In case anything is not covered by the present regulations, the Director of the Dental School shall ask for the proper instructions from the Director General of the National Department of Education.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All communications should be addressed to Elsie Pierce, care of THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT-CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE PIERCE—SHE WILL HELP YOU.

Dear Miss Pierce:

You have had a number of inquiries of late concerning the cleansing of impression trays. The quickest way to clean them is to moisten a piece of cheese-cloth with chloroform and gently rub the whole tray. This not only will remove the modeling compound, but will polish the tray as well.

E. M. D., N. Y.

We thank E. M. D. for her helpful suggestion and know it will be appreciated by our readers.

Dear Miss Pierce:

May I offer my method for keeping instruments in good condition. I find that instruments can be kept nice if they are first brushed on the lathe with pumice, then put into very hot water with a little lysol added, left in this bath for a few minutes, then dried and polished with a very dry towel or soft cloth.

E. G. C., Canada

We thank E. G. C. for her very fine suggestion and feel certain that it will be appreciated by our readers.

Dear Miss Pierce:

We use a liquid soap in our office for washing our hands. We have tried several makes, but cannot seem to find one that will not irritate the hands. Can you suggest a liquid soap that will not irritate the skin?

W. L. H., Indiana

ANSWER.—The liquid soap may not be the difficulty in your case. You may have a sensitive skin, you may be using too much soap and not rinsing your hands sufficiently after each washing, you may not dry them thoroughly, or the water in your locality may be hard, any of which reasons would trouble you as you describe.

Why not try some reliable cake soap for a while, one that contains little or no alkali? Your drug supply house can recommend some particular make to

you. A plain castile soap or one with a vegetable-oil base should suit you. They may be able to recommend a liquid soap with this type of base or give you a formula with which you can make your own.

Try using care in drying the hands thoroughly. This is said to be neglected by most people when washing their hands. They absorb the surface moisture often with a damp towel and think their hands are dry, when really the heat of the body or the air completes the drying process. Not rinsing the hands very carefully after using the soap will irritate a tender skin, the soap remaining thereon soaking into it.

I would suggest that in connection with your hand washing you use a good hand lotion or cream, well rubbed in and dried off with a soft, clean towel. We regret that we cannot recommend any liquid soap to you, since we do not know the formulas of those you have used.

Dear Miss Pierce:

Within the past year I have taken a position with a dentist who never had an assistant before, and my problems in this office are many. The Doctor has been in practice over fifteen years and took me into his office upon the persuasion of a dentist friend who has always had an assistant since he opened his office over ten years ago. I have had experience over a period of years and took this position upon the recommendation of my former employer, who has retired from dentistry, and who was acquainted with my present employer.

We have no bookkeeping system here. The books that are kept the Doctor keeps at home, because he does not want me to know anything about his finances. When payments are made by patients, the Doctor puts them in his pocket. When I need cash for the small expenditures that come in from day to day, I have to disturb him, even when he is operating on patients. He will not permit me to order any supplies, so we often are out of certain things when he needs them most. Although I am trained to invest and cast inlays, he will not allow me to touch them. He will not allow me to prepare his syringes or the novocain solutions and yet he will not use the ampoules.

I could go on indefinitely enumerating the many things that trouble me in my daily tasks, but what I want to ask you is, how shall I convince the Doctor that he should keep books, that I am loyal to his office and will not talk about his "wealth" or his other affairs, and that I can do the things he does not permit me to do, thereby saving him time and money? What do you suggest? I wonder if there are other assistants who have to put up with similar conditions.

"Puzzled," Ill.

Answer.—In the first place, a dentist who has been practicing for fifteen years without an assistant would be rather hard to convert to the idea of turning over the many details of his practice which you mention, and others, to an assistant. I am rather surprised that he ever consented to take you into his office at all.

Having no bookkeeping system in the office is rather hard to understand, especially for the reason you cite, that he does not want to have you know about his finances. I think there is some

other reason, for surely as a coworker you should know about the financial affairs of the office or how you can help him to curtail unnecessary expenses, assist him in collecting bills or keep straight the payments made by patients?

Have you tried to have a frank talk with your employer, explaining that all progressive offices keep books and records, that what you can do for him saves his time and incidentally his money, since all that he has is time, which he occupies in direct service to patients at the chair, and that in proportion to this time used in rendering dental service will be his income; also, that patients do not like to see the dentist digging into his pocket for change while he is waiting on them, and that you are aware of the responsibility you have toward him, his office and his patients?

You will have to be patient, but I believe that you can in time "convert" this misguided member of the dental profession. How he ever got along without an assistant for fifteen years is the surprising thing, but we are told that there are many dentists in the country who do not employ assistants, and that their offices show it. We believe that every dental office should be conducted efficiently and with business procedure, and that this is the work of the assistant. There are a number of bookkeeping systems that are especially designed for dental offices, permitting the keeping of correct records with a minimum of work. Perhaps you can in time persuade your employer to look them over and select one that appeals to him. However, life is too short to waste your efforts if your suggestions meet with no response, and no doubt you would be happier in your work in an office where your experience could be used to advantage.

Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

A regular meeting of the Educational and Efficiency Society for Dental Assistants, New York, Inc., was held at the Academy of Medicine, 2 East 103rd Street, New York, N. Y., on February 11, 1930. The guest of honor and chief speaker was Dr. Charles M. McNeely, President of the Second District Dental Society, New York, who chose as his topic *Progress in Dentistry and the Dental Assistant*. Juliette A. Southard, Founder of the Society, spoke on the inception of the organization and its work. The Misses Keit, MacNeil and Danenbaum, charter members, talked briefly on the progress of the Society.

At the regular meeting of the Clinic Club, on February 17th, Dr. A. N. Urban presented an interesting and valuable demonstration and lecture on the making of orthodontic models. Members of the Club presented clinics before the Kings County Dental Society during the Mid-Year Meeting, February 19-21. These demonstrations included

the various phases of dental assisting and met with commendation from those in attendance. The Club meets regularly on the third Monday evening of each month, September to May, inclusive, and at each meeting one aspect of the work of the assistant is studied and demonstrated. The next meeting will be held at the office of Dr. S. Eolis, 1475 Broadway, New York, on Monday, April 21, 1930, at 7:30 p. m. All members of the Educational and Efficiency Society are invited to attend.

A class in parliamentary procedure has been successfully completed. During March a class on the development of x-rays was held, a group is now studying nitrous-oxid anesthesia, and a class on sterilization will be given shortly. These classes are one of the principal activities of the organization and are conducted under the supervision of competent teachers, on one evening each week, free to members of the Society. The secretary may be addressed as follows: Mary A. O'Connor, c/o Dr. E. R. Reiner, Cliffside, N. J.

The Society meets regularly on the second Tuesday evening of each month, October to May, inclusive, at the Academy of Medicine, New York. The next meeting will take place on Tuesday, April 8, 1930, at 8:00 p. m. A cordial invitation to attend is extended to the members of the dental profession and to their assistants.

BOOKS RECEIVED

A BOOK MAY BE AS GREAT A THING AS A BATTLE—DISRAELI

The Making and Filling of Cavities in the Proximal Surface of the Front Teeth with Gold Foil, by Charles E. Woodbury, D.D.S., F.A.C.D., LL.D., Professor of Gold Foil, Dental Department of Creighton University, Omaha, Nebraska.

Save for the esthetics, it must be admitted that gold foil is the most satisfactory filling material for the anterior teeth, but it is also a difficult operation to perform. Together with an increased interest in foil in general comes an added interest in this type of operation.

This book will be of material benefit to any one who wishes to perfect himself in this work. In form it is an innovation that might well be copied by other educational works. The illustrations form the basis, and each one occupies an entire page, while the opposite page is devoted to a description of that particular phase of the operation.

As the author states in the preface, the book is not intended to supersede the work of G. V. Black, but only to enlarge on a few of the different points of technic. It accomplishes this aim in a most commendable manner, and it is hoped that it will have a wide distribution.

118 pp., illustrated. Council Bluffs, Iowa: Charles E. Woodbury, D.D.S., 1930.—A. M. J.

A Manual of Exodontia, (Second Edition), by M. Hillel Feldman, D.D.S., Chief of the Dental Department of Lincoln Hospital; Post-Graduate Instructor in General Anesthesia, Allied Dental Council, New York, N. Y.

When the first edition of this work appeared, the reviewer took exception to the use of the drill. Since then he has had the opportunity of seeing Dr. Feldman operate and he now believes that the technic is of unusual merit and deserving of general adoption. It not only conserves tissue, but saves time and reduces greatly the post-operative discomfort of the patient.

As the author states in the preface: "Extraction, with a minimum of trauma to both the soft and the bony tissues, is maintained as the supreme objective of the operator." A careful following of the technic set forth in this book will bring about this desirable result.

While this book has been written primarily for the general practitioner, the specialist might read it with profit, and it is gratifying to note that it has attained the widespread popularity that it merits.

216 pp., with 203 illustrations and index. Philadelphia, Pa.: Lea & Febiger, 1930.—A. M. J.

EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—ADDISON

So live that some day you will be asked to write an endorsement of yeast cakes.

"I am a self-made man, sir; I began life as a barefoot boy."

"Well, I wasn't born with shoes on, either."

Man doesn't improve much. By the time he loses faith in Santa Claus he begins to believe in hair restorers.

(Doctor)—Those pictures on your walls are your failures, I suppose?

(Artist)—Yes, and that's where you chaps score over us—you can bury yours.

ABOUT THIS TIME OF YEAR

"I must draw the line somewhere," said the man with an attack of fishing fever.

(Teacher)—What is a volcano?

(Little Pupil)—A mountain with a hole in the top. If you look down you can see the creator smoking.

A Scotchman was fished from the river and declared dead. "Are you sure he is dead," asked a relative who was present. "He's dead, all right. When they got him out they went through his pockets but he didn't move, and that's that."

HOW IT HAPPENED

Another shower of pebbles and stones is reported to have fallen in Central Mexico. The latest theory regarding this phenomenon is that some place near the American border a determined golfer was trying to get out of a sand trap.

(Judge)—Can't this case be settled out of court?

(Pat)—That is what we wuz tryin' to do, yer Honor, when this policeman interfered.

(Lord Blessus)—You Americans are a queer people.

(American)—How's that?

(Lord Blessus)—You speak of a swindler as a confidence man, and by Jove you can't trust the bally chap at all.

"Now that you've seen my son and heir," said the proud young father, "which side of the house do you think he resembles?"

"Well," said his astonished bachelor friend, "his full beauty isn't developed yet, but surely you don't suggest that he—er—looks like the side of a house, do you?"

(He)—If I should kiss you would you scream for help?

(She)—I certainly would if you required help!

(Bozo)—Short skirts are certainly a puzzle.

(Bingo)—Yeah! I wonder what they will be up to next?

Little Bessie had her own way of remembering the things she learned. She could repeat the first line of the juvenile prayer, "Here I lay me . . ." She could count up to four in figures. She knew her alphabet up to the letter D. One night she was asked to say what prayers she knew before going to bed, and she rattled off the following: "Here I lay me down to sleep—one, two, tree, four—a, b, c, d—Amen."

FOR YOUR SCRAP BOOK

The figure 7 is considered a cabalistic number by poets and numerologists, but a correspondent of a Paris paper tells us that there is nothing very magical about it. However, this writer produces a mathematical curiosity of his own that is rather odd in its way. His magic figures are 142,857. When multiplied by 2 the result is 285,714, showing the very same figures in the first number. When multiplied by 3 the result is 428,571, still the same figures. Multiplied by 4, result 571,428, still the same figures. Multiplied by 5, result 714,285, same figures. Multiplied by 6, result 857,142, same figures, and curious enough the two sets of three figures of the first number are exactly transposed. When multiplied by 7 the result is 999,999, and the bubble bursts!

APRIL

April is a saucy jade,
Petulant and bossy maid,
Full of flippant whims and wiles,
But she's lonely when she smiles.

She will tease and goad the flowers,
First with sunshine, then with showers,
Lure them from their cozy beds,
And then freeze their pretty heads.

She will trick you and beguile,
Make you chase your hat a mile,
Just as something neat you spy,
Flick a cinder in your eye.

April is inconstant quite,
Wavering as candle light,
But she soon will settle down,
Sister May is due in town.

FUTURE EVENTS

EASTERN DENTAL SOCIETY OF NEW YORK

SCIENTIFIC SESSION

Thursday Evening, April 3, 1930

Meets the first Thursday of each month from October, 1929, to May, 1930.

Meeting Place: 425 Lafayette St., New York.

Essayist: Alfred Walker, D.D.S., Assistant Professor of Pulp-Canal Therapy, New York University.

Subject: *Facts and Fancies in Pulpless Tooth Therapy* (illustrated with lantern slides).

Round Table Discussions (in Amphitheatre): 8:15 P. M. sharp.

Subject: *Pulp-Canal Therapy.*

Leader: E. Alan Lieban, D.D.S.

A series of clinics, covering the subject of *Root-Canal Therapy* in detail, will begin at 7:30 P. M.

CLINICIANS

Frederick R. Adams	Herman Gruher
Harry Albert	L. Herbst
Frederick Birnberg	H. J. Kauffer
Ralph Howard Brodsky	Charles Ogur
Theodore D. Fonarton	Jacob B. Schneer
Nathaniel Freeman	Victor Stoll
A. L. Greenfield	E. Van Valey

M. Alden Weingart

THE HARVARD DENTAL ALUMNI ASSOCIATION and THE HARVARD ODONTOLOGICAL SOCIETY will hold a joint meeting at the Harvard University Dental School, Longwood Avenue, Boston, Mass., on Friday, April 4, 1930. Registration will start at 10:00 A. M.

Members of the Harvard Alumni Association and Harvard Odontological Society and those of the profession eligible to membership in the Alumni are cordially invited to attend.

EDWARD C. HOEY, D.D.S., *Secretary,*
12 Bay State Road, Boston, Mass.

THE AMERICAN BOARD OF ORTHODONTIA, created by the American Society of Orthodontists in July, 1929, will hold a meeting at the Noel Hotel, Nashville, Tennessee, on April 7, 1930, beginning at 9 A. M.

Those orthodontists who desire to qualify for a certificate from the Board as outlined in the article entitled *The American Board of Orthodontia* on Page 50 of the January number of *The International Journal of Orthodontia, Oral Surgery and Radiography* may receive full information and application form from

DR. B. FRANK GRAY, *Secretary*
209 Post Street,
San Francisco, Calif.

THE AMERICAN SOCIETY OF ORTHODONTISTS will hold its twenty-ninth annual meeting at the Noel Hotel, Nashville, Tennessee, April 8-11, 1930.

An attractive program by outstanding essayists and clinicians is being arranged, and this meeting should be one of extreme interest to every member of the Society.

A cordial invitation is extended to all ethical dentists who are interested in orthodontia.

O. A. OLIVER, *President,*
Nashville, Tenn.
CHARLES R. BAKER, *Sec'y-Treas.,*
Evanston, Ill.

THE KINGS COUNTY DENTAL SOCIETY will hold its April meeting at the Building of the Medical Society of the County of Kings, 1313 Bedford Avenue, Brooklyn, N. Y., on Thursday, April 10, 1930, at 8:30 P. M.

Louis J. Weinstein, Sc.D., Professor of Applied Physics and Metallurgy, College of Dentistry, New York University will speak on *Advancements in the Technology of Dental Casting Based on Cooperative Research by the National Bureau of Standards and the Weinstein Research Laboratories* (1922-1928). The discussion will be opened by Henry W. Gillett, D.M.D., F.A.C.D., Professor of Dentistry, Dental School, Columbia University.

Preceding the meeting, at 7:30 P. M., clinics on subjects relating to the essay will be given by Morris Goldenberg, D.D.S., William H. Crawford, D.D.S., and Leo G. Pollock, D.D.S.

JACOB SHAPIRO, *President,*
CHARLES OGUR, *Chairman,*
Educational Committee.

THE AMERICAN SOCIETY OF STOMATOLOGISTS will hold its seventh meeting at the Hotel McAlpin, New York, N. Y., April 10-11, 1930. A cordial invitation to attend this meeting is extended to all dental practitioners and general physicians. Members and non-members who wish to take part on the program may communicate with Dr. King S. Perry, Jeannette, Pa.

THE WESTCHESTER DENTAL SOCIETY will hold its last scientific session of the season at the Community Center Building, 122 South Broadway, Yonkers, N. Y., on Tuesday, April 15, 1930, at 8:30 P. M.

It will be "Home Talent Night," and Drs. Walter Fancher, A. W. Kettenring, Clinton T. Vail, I. Linder and A. Jutkowitz will present short clinics.

Every interested practitioner is invited to attend.

THE SOCIETY FOR THE ADVANCEMENT OF GENERAL ANESTHESIA IN DENTISTRY will hold its next meeting at the Hotel Buckingham, 101 West 57th Street, New York, on April 21, 1930, at 7:00 P. M. The scientific session will be devoted to a discussion on ethyl chlorid by Dr. Joseph Stovin of the Otolaryngological Service of the Polyclinic Medical School and Hospital and of the Hospital for Joint Diseases. Dr. Stovin can speak with authority from a vast experience with ethyl chlorid from the standpoint of its availability as a general anesthetic for minor operations.

LEONARD S. MORVAY, D.D.S., *Secretary*,
76 Clinton Avenue, Newark, N. J.
M. HILLEL FELDMAN, D.D.S., *President*,
730 Fifth Avenue, New York, N. Y.

THE CONNECTICUT STATE DENTAL ASSOCIATION will hold its annual meeting at Stamford, Conn., April 22-24, 1930.

THE CONNECTICUT DENTAL HYGIENISTS' ASSOCIATION will hold its annual meeting at the Stamford High School, Stamford, Conn., April 23-24, 1930.

EVELYN J. MAHER, *Secretary*.

THE MASSACHUSETTS DENTAL SOCIETY will hold its annual meeting at the Copley-Plaza Hotel, Boston, Mass., May 5-9, 1930.

THOMAS K. ROSS, *President*,
280 Main St., Fitchburg, Mass.

PHILIP E. ADAMS, *Secretary*,
236 Newbury St., Boston, Mass.

THE PSI OMEGA FRATERNITY, New York Alumni Chapter, will hold its annual banquet at the Hotel Commodore, New York, on May 10, 1930. Members of Psi Omega attending the New York State Meeting are cordially invited. For reservations, address

CLYDE H. SCHUYLER, D.D.S.,
576 Fifth Avenue, New York, N. Y.

THE VIRGINIA STATE DENTAL ASSOCIATION will hold its next meeting in Richmond, Va., May 12-14, 1930.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK will hold its sixty-second annual meeting at the Hotel Commodore, New York, May 12-16, 1930.

Dr. Thomas C. Swift, 1 Park Avenue, Mt. Vernon, N. Y., is Chairman of the Exhibit Committee; Dr. Harvey J. Burkhart, 800 East Main Street, Rochester, N. Y., is Chairman of the Program Committee; and Dr. J. W. Schelpert, 30 Cottage Avenue, Mt. Vernon, N. Y., is Chairman of the Clinic Committee. Any information regarding these departments should be addressed directly to the chairmen of the committees.

The first two days of the meeting will be devoted to educational clinics, and the following subjects will be covered by the teachers designated:

Root Canal Therapy, Guy P. Bannister, Cleveland, Ohio; Arthur B. Crane, Washington, D. C.

Operative Dentistry (Inlay), W. Elliott Taylor, Frank Cole; Herbert S. Bailey, New York, N. Y.

Operative Dentistry (Amalgam), William R. Pond, Rutland, Vt.

Operative Dentistry (Gold Foil), LeRoy L. Hartman, New York, N. Y.

Ceramics, William J. Meier, H. S. Both, New York, N. Y.

Removable Bridgework, S. Marshall Weaver, Cleveland, Ohio; Milton Cohen, New York, N. Y.

Fixed Bridgework, James K. Burgess, New York, N. Y.; Emory C. Thompson, Buffalo, N. Y.

Clasp Attachments for Partial Dentures and Removable Bridgework, Forry R. Getz, Lee G. Pollock, New York, N. Y.

Partial Denture Construction, Geo. P. Phillips, Boston, Mass.; Clyde H. Schuyler, New York, N. Y.

Full Denture Construction, Arthur T. Rowe, New York, N. Y.; Frank A. Fox, Philadelphia, Pa.

Dietetics, Sherman L. Davis, Indianapolis, Ind.

Diseases of the Mouth and Their Treatment, J. L. Appleton, Jr.; James N. Aiguier, Philadelphia, Pa.

Periodontia, T. B. Hartzell, Minneapolis, Minn.; Harold J. Leonard, New York, N. Y.

Orthodontia, under direction of Joseph D. Eby, New York, N. Y.

Radiography and Photography, Ralph S. Voorhees, Rochester, N. Y.

Oral Surgery, Harold S. Vaughan, Henry S. Dunning, Adolph Berger, Leo Winter, Douglas B. Parker.

On the literary program there will be contributions by George B. Winter, St. Louis; John V. Mershon, Philadelphia; Thomas B. Hartzell, Minneapolis; Sherman L. Davis, Indianapolis; J. L. Appleton, Jr., Philadelphia. There will be important reports from the Scientific Committee and also from the Bloomingdale Hospital of New York.

A banquet will be held on Thursday evening, May 15th.

There will be general clinics on Friday morning, May 16th.

During the time of the meeting, sessions of the New York State Dental Hygienists Association and of the Dental Assistants Association of the State of New York will be held.

The Executive Council will convene on Tuesday, May 13th, at 2:30 P. M.

WILLIAM C. FISHER, *President,*
A. P. BURKHART, *Secretary,*
57 East Genesee St., Auburn, N. Y.

THE DENTAL HYGIENISTS ASSOCIATION OF THE STATE OF NEW YORK will hold its Tenth Annual Meeting at the Hotel Commodore, New York, May 13-16, 1930. Members of the dental profession, dental hygienists and dental assistants are cordially invited to attend the sessions during these days. An interesting literary and clinical program will be presented which should be particularly stimulating and helpful to the hygienist. Both members and nonmembers are urged to be present at this anniversary meeting. Drs. Alfred Walker, Marion Lerrigo and Rose Schwartz will be included among those on the program.

A TESTIMONIAL DINNER AND DANCE will be tendered to M. HILLEL FELDMAN, D.D.S., by his friends in the profession of dentistry at the Hotel New Yorker, on Saturday, May 17, 1930, in appreciation of his many years of teaching in the field of anesthesia and exodontia.

EDWARD E. LEBWITH, D.D.S., *Secretary,*
760 Mott Avenue, New York, N. Y.

THE SOUTH CAROLINA STATE DENTAL ASSOCIATION will hold its sixtieth annual meeting in Columbia, S. C., May 19-21, 1930.

N. W. MACAULAY, D.D.S., *Secretary,*
Medical Building, Columbia, S. C.

THE MISSOURI STATE DENTAL ASSOCIATION will hold its annual meeting at the Hotel Jefferson, St. Louis, Mo., May 19-22, 1930.

An interesting program is being arranged, and we invite the entire dental profession to meet with us.

THE ONTARIO DENTAL ASSOCIATION will hold its sixty-third annual convention at the Royal York Hotel, Toronto, Canada, May 19-22, 1930. A very fine program of essays and clinics has been arranged.

Ethical dentists of Canada and the United States are invited to attend as guests of the Ontario Society.

FRED J. CONBOY, *Sec'y-Treas.*
Parliament Bldgs.
Toronto 5, Ont., Canada

EXAMINATION FOR APPOINTMENT IN THE ARMY DENTAL CORPS

An examination of applicants for appointment as First Lieutenants, Dental Corps, Regular Army, will be held within the continental limits of the United States on May 19-24, 1930. Examining boards will be convened at Washington, Denver, San Francisco and San Antonio. A circular of information concerning the Army Dental Corps may be secured by writing to the Adjutant General, United States Army, Washington, D. C. Applications for permission to take the examination should be addressed to the Adjutant General, U. S. Army, Washington, D. C.

The applicant must be a citizen of the United States, a graduate of a recognized dental school, in good standing in his profession, between the ages of 22-6/12 and 31-9/12 years at the time of examination, and must have been engaged in the practice of his profession for 1-11/12 years subsequent to graduation.

There is at present one vacancy in prospect in the Army Dental Corps. In addition to this, it is expected that vacancies occurring before June 30, 1931, will be filled from successful candidates in this examination. Six vacancies occurred last year in the Army Dental Corps, one the year before. The average for the last five years has been three vacancies per year.

For the Surgeon General:
J. R. BERNHEIM,
Colonel, Dental Corps,
Assistant.

THE TEXAS STATE DENTAL SOCIETY will hold its fifteenth annual convention at Fort Worth, Texas, May 20-23, 1930.

A cordial invitation to attend is extended to all dentists who are members of the American Dental Association.

For information relative to exhibits write to Dr. W. H. Nugent, Chairman, 713 Medical Arts Bldg., Fort Worth, Texas.

GEORGE H. MENGEL, *President,*
El Paso, Texas.
J. G. FIFE, *Sec'y.-Treas.,*
Dallas, Texas.

THE IOWA STATE BOARD OF DENTAL EXAMINERS will meet at the State

University of Iowa College of Dentistry, Iowa City, Iowa, May 26-29, 1930, at 9:00 a. m., for the purpose of examining applicants for license to practice dentistry in Iowa. An examination for dental hygienists will be given also.

For further information and application blanks, address the State Department of Health, Capitol Building, Des Moines, Iowa. All papers and credentials must be filed with the Department at least fifteen days prior to date of examination.

THE NEVADA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting in Room 8, Masonic Temple Building, Reno, Nevada, beginning promptly at 9:00 a. m., June 2, 1930.

All applications and complete credentials, together with fee, must be in the hands of the Secretary at least twenty days prior to the examination.

G. C. STEINMILLER, D.D.S., *Secretary,*
P. O. Box 274, Reno, Nevada.

EXAMINATION FOR APPOINTMENT TO DENTAL CORPS OF U. S. NAVY

A competitive examination for appointment to the Dental Corps of the United States Navy will begin June 9, 1930, at the U. S. Navy Medical School, Washington, D. C. Candidates must be citizens of the United States, between twenty-one and thirty-two years of age at the time of appointment, and graduates of recognized dental schools. The examination will be both theoretical and clinical, and the usual duration is about seven days. A circular containing full information relative to the Dental Corps and the prescribed form of application may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. No allowance is made for the expense of applicants appearing for examination.

C. E. RIGGS,
Surgeon-General, U. S. Navy.

THE NORTHEASTERN MASSACHUSETTS DENTAL SOCIETY will hold its annual convention at the New Ocean House, Swampscott, Mass., June 9-11, 1930.

For information, communicate with

HENRY I. YALE, D.M.D., *Secretary*
Peabody, Mass.

THE VIRGINIA STATE BOARD OF DENTAL EXAMINERS will hold its regular meeting at the Medical College of Virginia, Richmond, Va., at 9:00 A. M., June 10, 1930.

Applicants are required to present a certificate from the State Board of Education showing that they have had one year of academic education equal to one year of college work.

Applications, with fee and photograph, must be filed ten days before the date of examination. For application blanks and other information, apply to

JOHN M. HUGHES, D.D.S., *Secretary,*
715 Medical Arts Bldg., Richmond, Va.

THE MINNESOTA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at the College of Dentistry, University of Minnesota, Minneapolis, Minn., on June 12, 1930. Applications should be in the office of the Secretary by June 1st.

W. H. SMITH, D.D.S., *Secretary,*
601 Donaldson Bldg., Minneapolis, Minn.

THE INDIANA STATE BOARD OF DENTAL EXAMINERS will hold its annual meeting in the House of Representatives Room, State House, Indianapolis, Ind., June 12-16, 1930, for the purpose of examining all applicants with proper credentials. Applications should be in the hands of the Secretary one week before the beginning of the meeting.

For applications, clinical requirements and other information, address

J. M. HALE, *Sec'y-Treas.*
Mount Vernon, Ind.

THE TEXAS STATE BOARD OF DENTAL EXAMINERS will hold its next regular meeting at the Texas Dental College, Houston, Texas, on June 16, 1930, promptly at 8:00 A. M., for the purpose of examining applicants for the practice of dentistry in Texas. Applications with photograph and fee must be in the hands of the secretary by June first.

For further information and application blanks, communicate with

MAXWELL C. MURPHY, D.D.S., *Secretary*
King's Daughters' Hospital, Temple, Texas.

THE DELAWARE STATE BOARD OF DENTAL EXAMINERS will hold its next meeting in the Municipal Building, Tenth and King Streets, Wilmington, Del., June 18-19, 1930, from 9:00 A. M. to 5:00 P. M.

For further information, address

W. S. P. COMBS, *Secretary,*
Middletown, Del.

THE CONNECTICUT DENTAL COMMISSION will meet at Hartford, Conn., June 25-28, 1930, for the examination of applicants for license to practice dentistry and dental hygiene, and to transact any other business proper to come before it.

Applications should be in the hands of the Recorder at least two full weeks before the meeting. For application blanks and other information, apply to

ALMOND J. CUTTING, *Recorder,*
Southington, Conn.

THE SECOND INTERNATIONAL ORTHODONTIC CONGRESS will be held in London, England, about the middle of July, 1931. The object of the Congress is the advancement of the science of orthodontics and its practical application.

It is hoped that orthodontists and dental practitioners from all parts of the world will attend.

Information regarding traveling facilities and hotel accommodations may be obtained from the official agents of the Congress: Messrs. Morgan Pope & Co., 7 St. James's St., London, England; 6 Rue Caumartin, Paris, France; and 71 Vanderbilt Ave., New York; also, Messrs. Noel Vester & Co. (Agents), 44 Unter den Linden, Berlin, Germany.

J. H. BABCOCK, *President-General,*
A. C. LOCKETT,
B. MAXWELL STEPHENS,
Secretaries-General.

THE AMERICAN ACADEMY OF PERIODONTOLOGY will hold its seventeenth annual meeting at the Antlers Hotel, Colorado Springs, Colorado, July 17-19, 1930.

CLYDE C. SHERWOOD, *President*
1304 Second Natl. Bank Bldg.,
Toledo, Ohio.
C. H. GRACEY, *Secretary-Treasurer*
269 Rowena Street, Detroit, Mich.

THE AMERICAN DENTAL ASSISTANTS ASSOCIATION will hold its sixth annual meeting in Denver, Colorado, July 21-25, 1930.

RUTH F. ROGERS, *General Secretary*
Room 803, 223 West Jackson Blvd.
Chicago, Ill.

THE AMERICAN DENTAL HYGIENISTS ASSOCIATION will hold its seventh annual meeting in Denver, Colorado, July 21-25, 1930.

AGNES G. MORRIS, *Secretary,*
886 Main Street,
Bridgeport, Conn.

The position of DENTAL INTERN at the LENOX HILL HOSPITAL, New York, will be vacant September 1, 1930. The term of service is one year, with full maintenance. Apply in writing, not later than April 15, 1930, to

GEORGE F. SAUER, *Superintendent,*
112 East 77th St., New York, N. Y.